ENGINEERING
NEWS-RECORD

JUNE 23, 1960

PRICE 50 CENTS

2nd Quarterly Cost Roundup

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Bridge at Paris airport has wing motif p. 104

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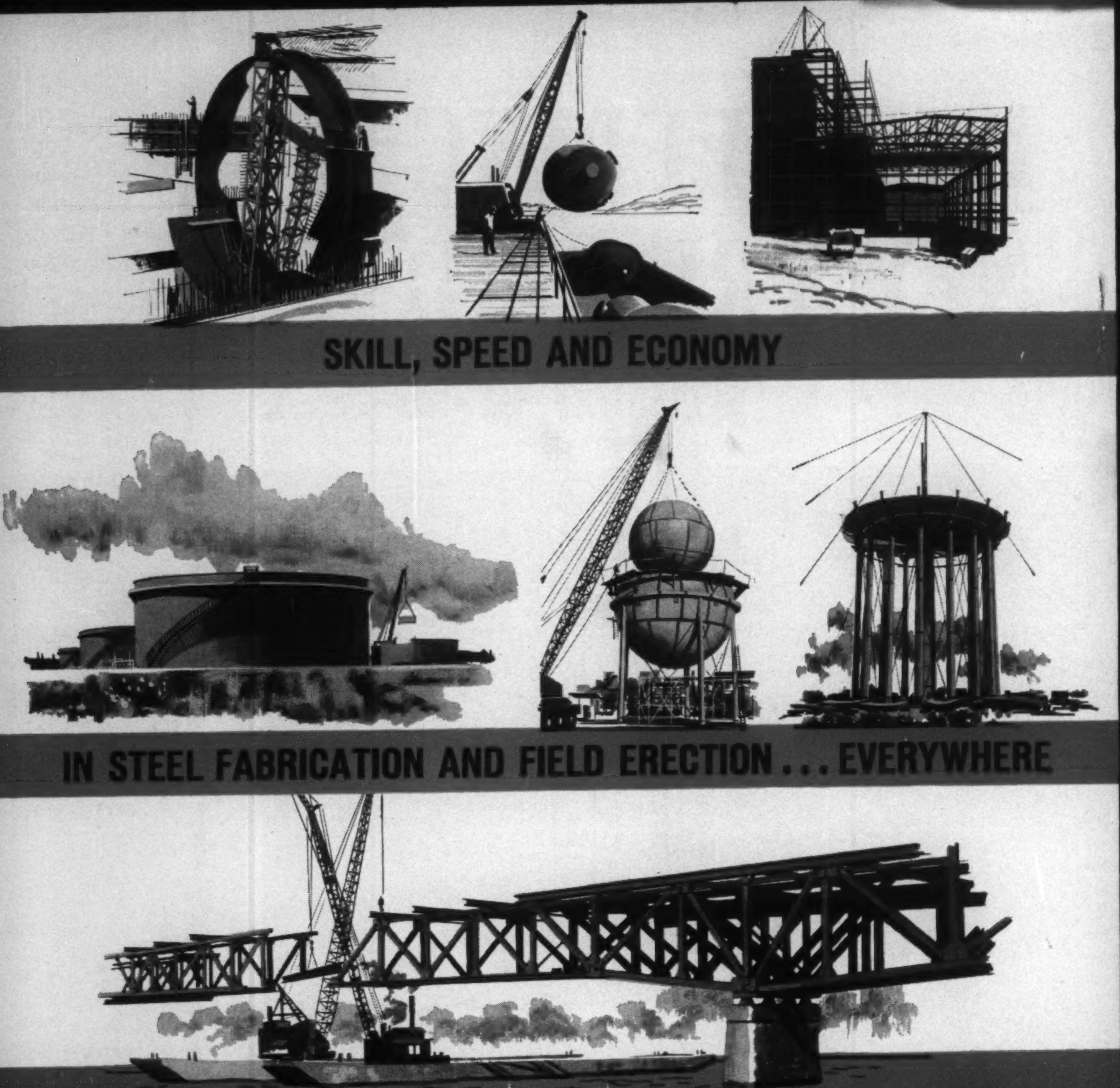
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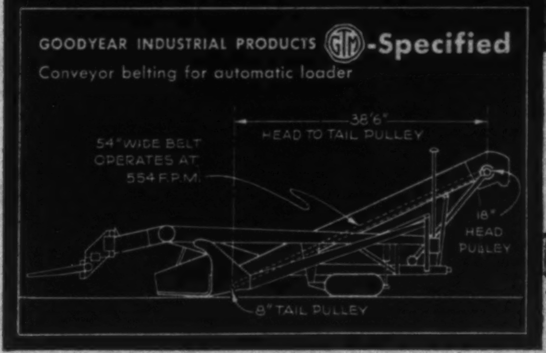
Moving mountains of earth against a deadline looked like too tough a job for conveyor-type loaders. Most work crews on this big Midwestern dam project didn't even try them—others quit when they hit the first belt-wrecking ledge of shale. But one contractor kept his loaders going full tilt. And many of them were equipped with rugged conveyor belts recommended by the G.T.M.—Goodyear Technical Man. The belts' box score: those supplied through the G.T.M. worked rings around the other brands he tried. In fact, one Goodyear belt handled a whopping 528,925 cubic yards before retirement; another loaded 329,121 yards. And both can be compared with a 235,000-yard average for all the loader belts on this job.


GOODYEAR INDUSTRIAL PRODUCTS GTM-Specified
Conveyor belting for automatic loader
38'6" HEAD TO TAIL PULLEY
54" WIDE BELT OPERATES AT 554 F.P.M.
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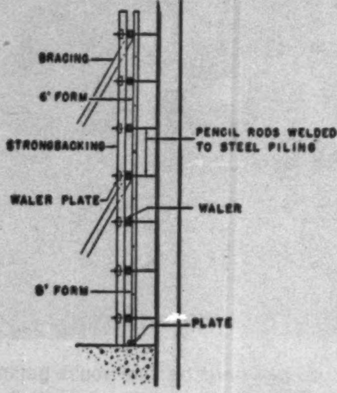
How to pour a 750 foot lake retaining wall with thickness from 12 to 20 inches and 13 ft. high, faster and more economical. S. N. Nielsen Construction Company, Chicago, had that problem on a 600 unit apartment on Lake Michigan shoreline. Since a fixed core could not be obtained while using sheet piling only, the superintendent used Symons Steel-Ply Forms with sheet piling and pencil rods as ties.



Was this method a success? After 250 feet of wall had been formed, poured and stripped, the forming costs were computed at 12 cents a square foot.

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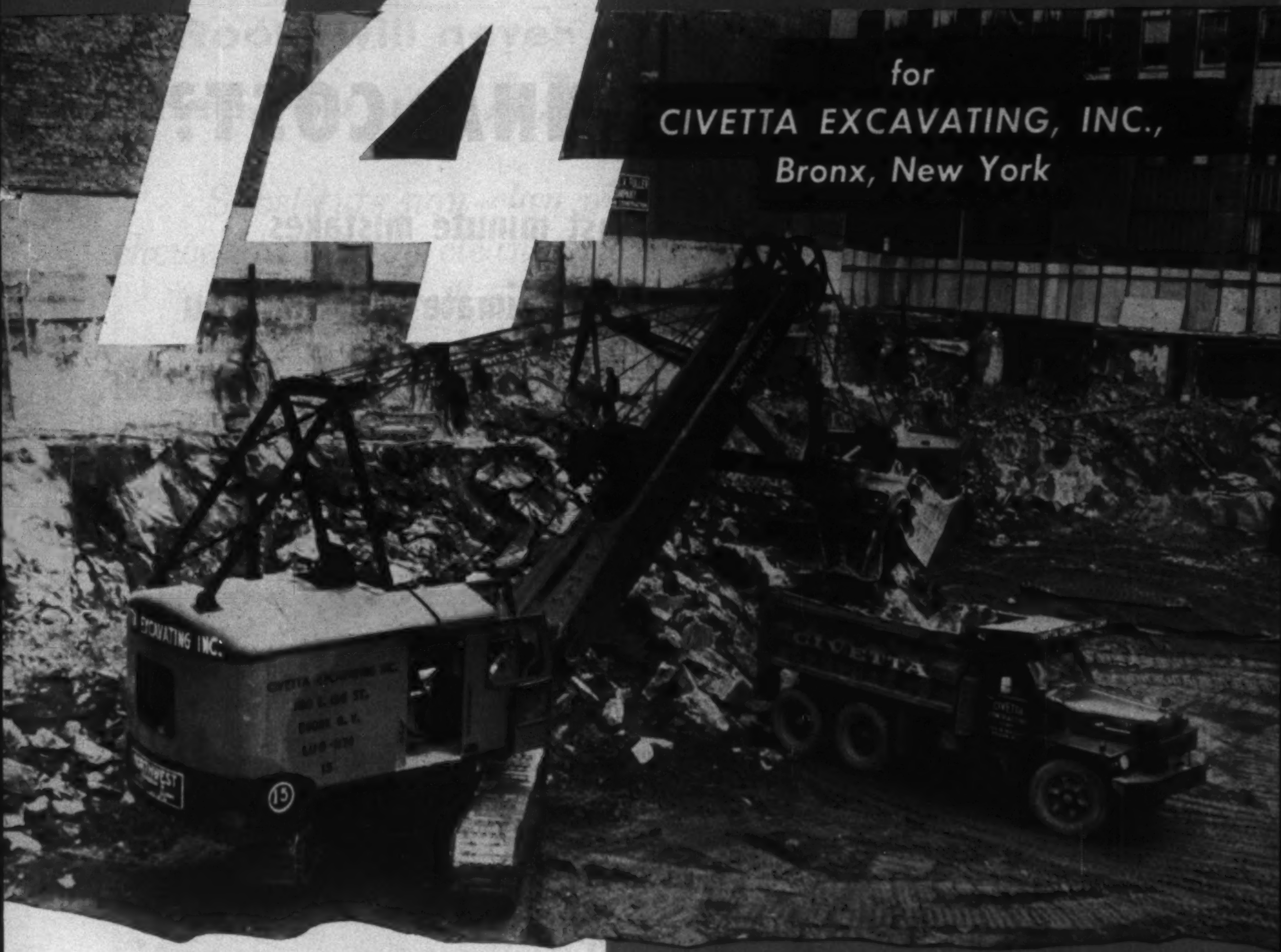

NEW YORK'S Rocky Backbone takes a REAL ROCK SHOVEL

MANHATTAN SCHIST—the tough backbone of Manhattan Island—is a real test for any shovel. Only a *real* Rock Shovel can handle basement work in this tough digging. Two Northwests, a model 80-D Shovel and a Model 41 Pullshovel, took out the tough rock in the 90,000 sq. ft. hole. The job is the Zeckendorf Hotel, a $66,000,000 job across from Rockefeller Center. The Contractor is Civetta Excavating, Inc, of Bronx, New York, an old Northwest user who has owned fourteen Northwests.

Northwests are built for rock digging and if you have a *real* Rock Shovel you never have to worry about getting output in any kind of digging. Northwests load fast—and easily! Ample power combines with the Dual Independent Crowd that utilizes force most other independent crowd shovels waste to give you a full dipper every time—without stuttering, dipper jockeying or restarts. Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and bring greater accuracy when spotting to trucks. The Cushion Clutch eliminates shock overloads before they reach machinery.

These are the things that get the job done—the things that let you say, "That Northwest is always ready to go!" They are a small part of the many advantages in design and quality that make the Northwest the finest machine of its kind.

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Roots will never be a problem or worry when you use AMVIT Jointed Clay Pipe

Substitute non-clay pipe was chewed to bits by cleaning augers after roots entered a leaky joint

Each year thousands of taxpayers' dollars are wasted on "substitute" materials used in sewer lines.

The photograph on the right shows a piece of pipe that became the root of trouble for a homeowner.

Roots entering a loose joint in this flattened pipe actually forced it out of round and destroyed the coupling. When a sewer cleaner was used, the sharp rods and augers chewed the soft pipe to bits.

This can't happen when you specify and use Amvit Jointed Vitrified Clay Pipe.

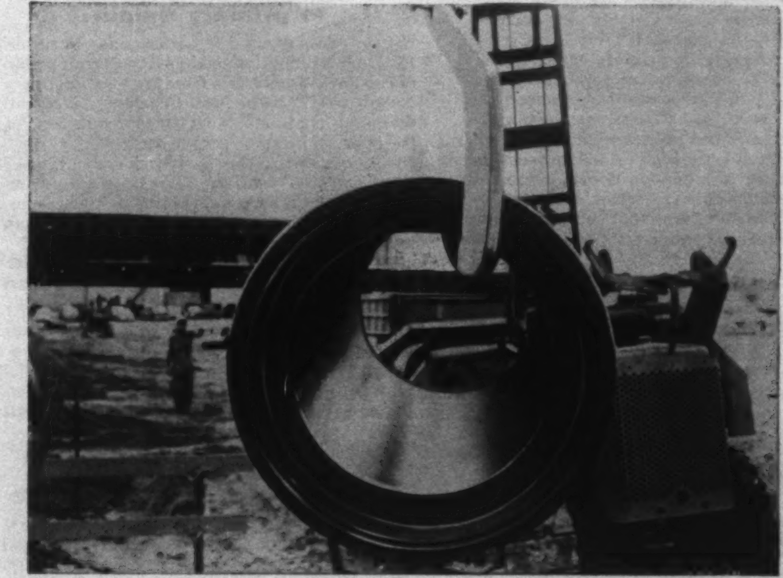
Amvit is a plastic compression joint on the ball and socket principle. The surfaces of the bell and spigot are in constant compression. Roots cannot enter the line.

And longer, stronger Amvit clay pipe cannot be harmed by sewage. It's strong and rigid, can't sag or bend. Roots cannot pierce the dense, rock-like walls or its tight compression joint.

This is an actual photograph of a substitute pipe failure.

Amvit clay pipe can't be roughened and pitted by rust. It's too hard to be scratched or cut. Its glossy, self-scouring surface is proof against heat, moisture, chemicals.

For more information on how Amvit can help cut sewer project costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.



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CIRCLE 5 ON READER SERVICE CARD

CEDARAPIDS PORTABLE PLANTS...

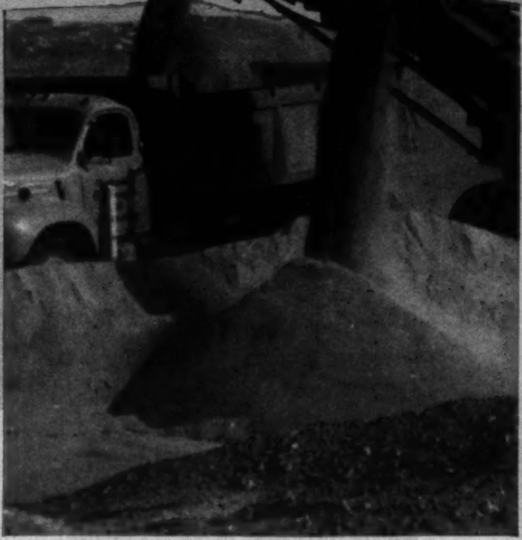
MEET INTERSTATE SPECIFICATIONS

With one of these Cedarapids Portable Plants you can meet the toughest Interstate specifications—and bid your jobs with full confidence that Cedarapids' extra-high production, with less maintenance requirements than most smaller capacity plants, will give you maximum profits on your bid price.

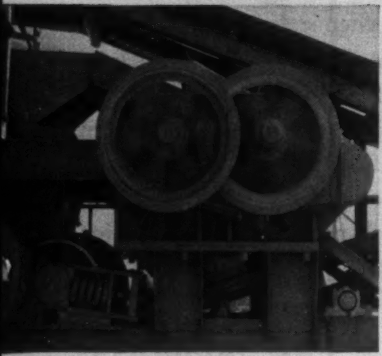
In today's competitive crushing picture, meeting specs right on the button is important—big-volume output is important—steady, low-maintenance operation is very important. But are you overlooking the advantages of 100% portability? The ability to move to the job fast—to move *with* the job and utilize job-site deposits to cut your hauling costs?

Cedarapids Portable Plants are engineered especially to give you many low-cost-per-ton advantages of stationary plants *on wheels*. Ask your Cedarapids Dealer to prove it!

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa



Each Component PRODUCTION-BALANCED



Twin-Jaw Crusher increases primary capacity 40% to 100%

In the two biggest-producing Cedarapids Portables—the Super Commander and the Challenger—an exclusive Twin-Jaw Crusher is used to step up primary capacity and thus increase overall plant production. The Twin-Jaw Crusher combines overhead eccentric, forced feed design with two movable, synchronized jaws operating at high speed to provide the high velocity jaw action that crushes tremendous hourly tonnages of even the hardest materials. Jaw life 5 to 8 times longer than that on single-jaw crushers reduces maintenance.

Roll Crusher, Feeder, Conveyors, Elevating Wheel all matched to primary output

Every component in Cedarapids Portable Plants is production-balanced to permit a fast-paced flow of materials from feeder to delivery conveyor. With the Roll Crusher's large roll diameter, combined with the greater width of the rolls (the factor which controls capacity), the secondary crusher balances the output of the Twin-Jaw primary. On the Super Commander and Challenger Plants, the feeder, conveyors and elevating wheel are larger than usual to handle increased plant production.

S560-N

Cedarapids
Built by IOWA

CEDARAPIDS CHALLENGER

When specs call for high tonnages of 100% crushed products, this is your plant! Arranged one way, it produces three sizes of 100% crushed aggregate, plus sand and fines. When 100% crush is not required and pit material does not have excessive fines, the Challenger can be fed from front or rear to produce one to four products.

CIRCLE 6 ON READER SERVICE CARD

. . . engineered for lowest cost per ton

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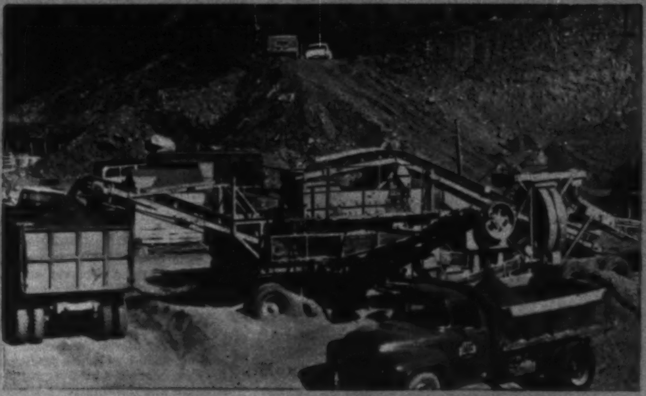
CEDARAPIDS SUPER COMMANDER

Here's the plant that meets the big-tonnage, strict-specification demands of Interstate jobs with no sacrifice of portability. Optional air-suspension third axle holds axle load within most State limits. The permanently mounted front delivery conveyor assures quick set-up time and fast, easy truck loading.

Cedarapids

Horizontal Vibrating Screen easily handles highest hourly tonnages

All Cedarapids Portable Plants use horizontal screens, not only because their *horizontal* design gives up to 30% greater screening capacity and more accurate *gradation* for meeting strict *specifications*, but also because of their obvious advantages of portability. For transporting, screen position does not have to be changed.



CEDARAPIDS COMMANDER

When your volume requirements are under 300 tons per hour, the Standard Commander Plant is a high profit maker. And remember the other plants in the complete line of Cedarapids Portables —Master Tandem, Junior Tandem, Pitmaster, and Unitized Plants.

Send the coupon TODAY for full details about the complete line of Cedarapids Portable Plants

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send information about the plants checked.

☐ Super Commander ☐ Challenger ☐ Commander
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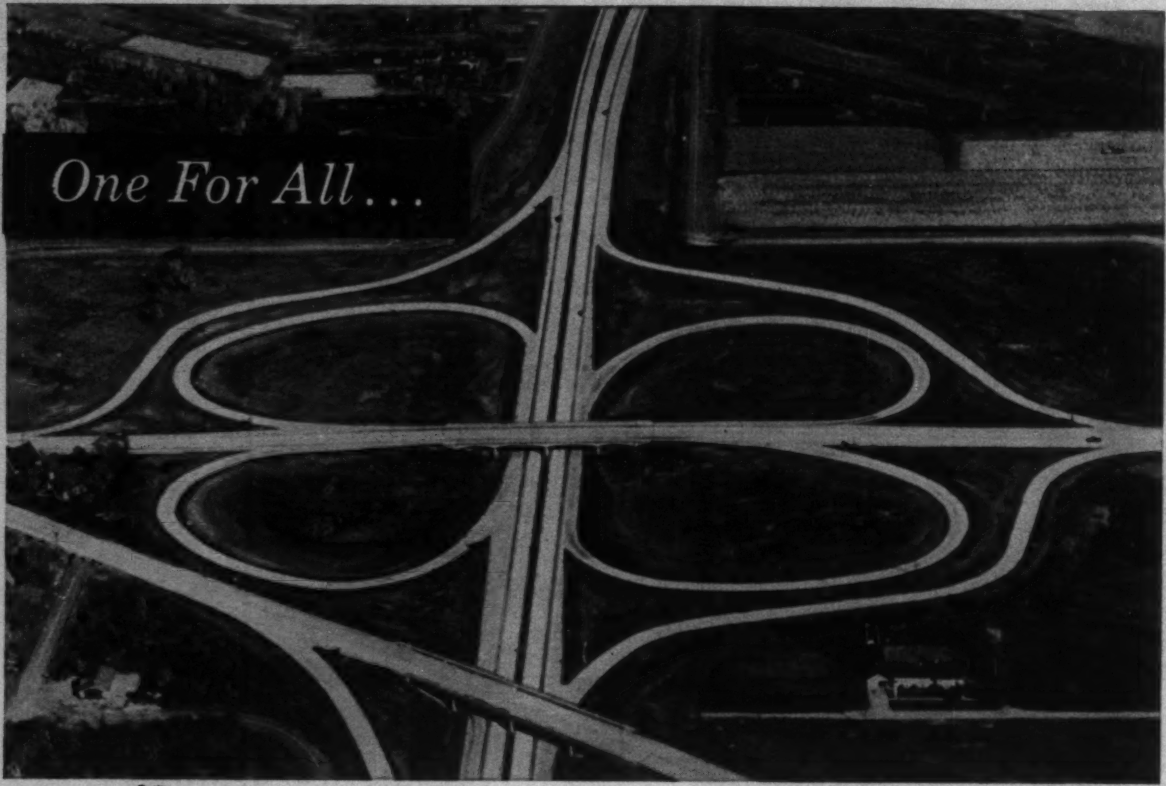

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#67 COLD-APPLIED JOINT & CRACK FILLER

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#99 JFR SEALER

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#357.1 HOT-POUR RUBBER-ASPHALT JOINT SEALER

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#357.9 HOT-POUR JFR JOINT SEALER

Specially designed to resist jet aircraft fuel. Meets Federal Spec. SS-S-167.

CD579.1 JOINT CURING TAPE

Concrete joint curing tape. Retains moisture in the concrete essential for curing joints. Protects freshly sawed or formed concrete joints against infiltration of foreign matter, cuts joint cleaning costs to a minimum.

CURING COMPOUNDS

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Cork granule base in watertight bituminous binder, reinforced with heavy-duty impregnated felt liners. Recovers up to 80% of original thickness after series of three 50% compressions.

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Reader Comment

AGC vs. NAPC on Contracts

- **National Association of Plumbing Contractors has issued an argument for separate contracts.**
- **Associated General Contractors argues for single contract system, comments on ENR editorial.**

SIR—With reference to your "Owner's Choice" editorial in the April 14 issue, the Associated General Contractors of America wholeheartedly agrees that the owner himself must be free to choose the contract system which he believes will benefit him most.

However, the attack on the single contract system in the brochure issued by the National Association of Plumbing Contractors attempts to promote separate contracts through such wide distribution of erroneous and highly misleading information that the AGC feels it is necessary to set the record straight by the issuance of a point by point rebuttal. Copies of this rebuttal in full are available from AGC Headquarters (20th and E Streets, N. W., Washington, D. C.), but the majority of the claims made by the NAPC brochure and AGC's answering facts are given below to show how AGC's position is justified.

• **NAPC**—"The separate mechanical contract is now required by law on public projects in many of the highly industrialized states . . ."

AGC—Only seven states have such mandatory separate contract laws. One of these seven recently was urged by a research group to save money by reverting to the single contract system. In New York, faculty members of the School of Architecture of Pratt Institute made a study of New York City housing and recommended, "Eliminate separate contracts . . . If general contractors were in complete charge of a job, it seems possible that the work of the various trades could be coordinated more efficiently and brought to completion sooner at some saving."

• **NAPC**—"When using the separate mechanical contract system, an owner, in consultation with his architect and engineers, retains and exercises his right to sole and final determination as to who shall perform all phases of the work and in what manner."

AGC—This implies that the owner loses these rights under the single contract system. On the contrary, the owner may select the subcontractors or, through his architect, disapprove of any subcontractor the general contractor proposes. On public work, every federal agency concerned with construction reserves the right to approve or disapprove of subcontractors.

• **NAPC**—"Separate mechanical contracts result in lower costs." The NAPC brochure claims that the savings on nine cited projects ranged from 27.3% down to 2% with an average saving of 7.5%.

AGC—In none of the nine cases cited does the NAPC include the AIA-recommended standard 4% charge for an architect to coordinate a separate contract job. If the 4% is added to these cases, three of them are changed from instances where separate contracts allegedly resulted in savings to cases where separate contracts resulted in additional costs to the owners. Further, in three more cases the figures and "facts" cited by NAPC are incomplete or inaccurate. Thus the real picture is this: Of the nine cases which NAPC itself selected from among thousands, only three actually resulted in alleged savings, and these savings averaged only about 2%.

• **NAPC**—"When separate bids have been taken, the owner, architect, and engineer have before them all costs and details on specific portions of the project. If it then becomes desirable or necessary to revise plans, precise figures enable the owner to make far more intelligent decisions."

AGC—Under the single contract system, the owner, engineer and architect can request the general contractor who may be the low bidder to furnish any detailed information concerning specific portions of the project, thus giving the owner all the information that would be available through taking separate bids.

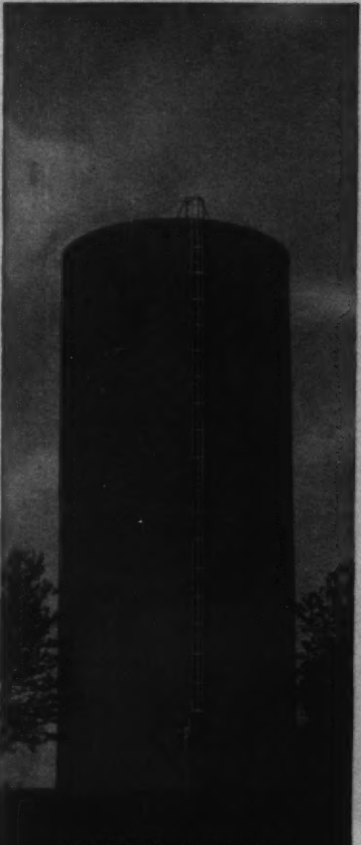
• **NAPC**—"The owner using the single contract method is actually very remote from the people doing his mechanical work; whereas, the owner using the separate, direct mechanical contract has direct access to, and control over, his mechanical work."

AGC—An owner very seldom, if ever

(*Reader Comment continued p. 18*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed, Editor Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE



New 660 000 Gallon Stand Pipe, City of Wadsworth, Ohio

Consider these features
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BIGGEST VALUE

The modern Allis-Chalmers HD-16 crawler tractor has the horsepower, weight and drawbar pull needed to handle most tractor jobs on your big spreads. With it, you stay in the same horsepower class as the biggest tractors available a few years ago and save the extra cost of moving up to "extra big" machines.

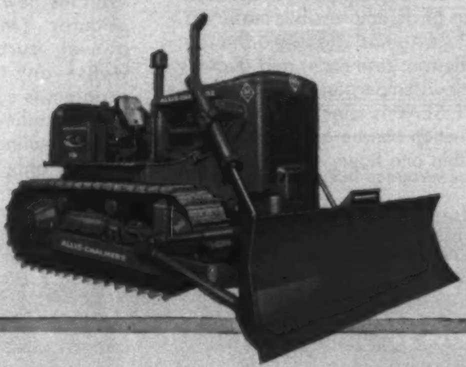
Look at the HD-16 . . . watch it work . . . compare it to any other crawler and you'll be convinced that, dollar for dollar, you can't buy a bigger producer. Here is an up-to-date power package that converts up to 150 hp at the flywheel to as much as 60,000 lb of drawbar pull. With bulldozer, more than 19 tons of "live-action" weight go to work moving material more profitably than any of your older "big" tractors.

With today's HD-16's, you maintain the power balance of your spread and add greater ease of operation and maintenance that keeps building production

. . . move ahead with

IN 150-HP CLASS

for you. Whether you are replacing outmoded tractors or moving up to more power, you will find it to your advantage to check the tremendous working range of the low-cost, big tractor—the Allis-Chalmers HD-16. See these advantages in action: *industry's healthiest engine . . . toughest track ever built . . . torque converter or all-gear drive . . . permanently lubricated truck wheels, idlers, rollers with tapered roller bearings.* Call your Allis-Chalmers construction machinery dealer for a demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



ALLIS-CHALMERS A-C

power for a growing world

best ROUTE to better sealing

ALLIED Jet Seal

THE REASONS WHY . . .

- JET SEAL (9015H) has no flow, even at elevated temperatures (200°F).
- Vertical and overhead joints can be sealed without any special preparation.
- JET SEAL will prevent penetration of water into joints.
- JET SEAL is highly resistant to highway salts.
- JET SEAL will prevent incorporation of incompressible materials.
- JET SEAL has positive adhesion, cohesion, resilience, and ductility at low temperatures (−20°F).
- JET SEAL is quick curing. Construction can be open to all traffic within one hour.

For further information, write to:

IDEAL FOR CURB JOINTS—TIGHT SPOTS

With the new COMPACT Applicator (Model X-691-E above), curb joints, wing walls—any tedious sealing problem is solved. Both JET SEAL Applicators offer the highest sealing efficiency, and are the only equipment authorized for placement of Allied JET SEAL.

HIGHWAY ENGINEERS SPECIFY ALLIED JET SEAL

Highway construction engineers the nation over are specifying Allied JET SEAL as the preferred concrete joint sealant. JET SEAL's superior sealing qualities mean time, labor, and money saved during application and through JET SEAL's exceptionally long life.

Listed on the left are some of the reasons why Allied JET SEAL joint sealant specifications have been adopted by these states:

California, New York, Texas, Tennessee, Connecticut, Minnesota.

Allied JET SEAL can solve your concrete joint sealing problems on highways and bridges (including vertical joints). JET SEAL (9015H) is the most efficient concrete joint sealant ever devised.

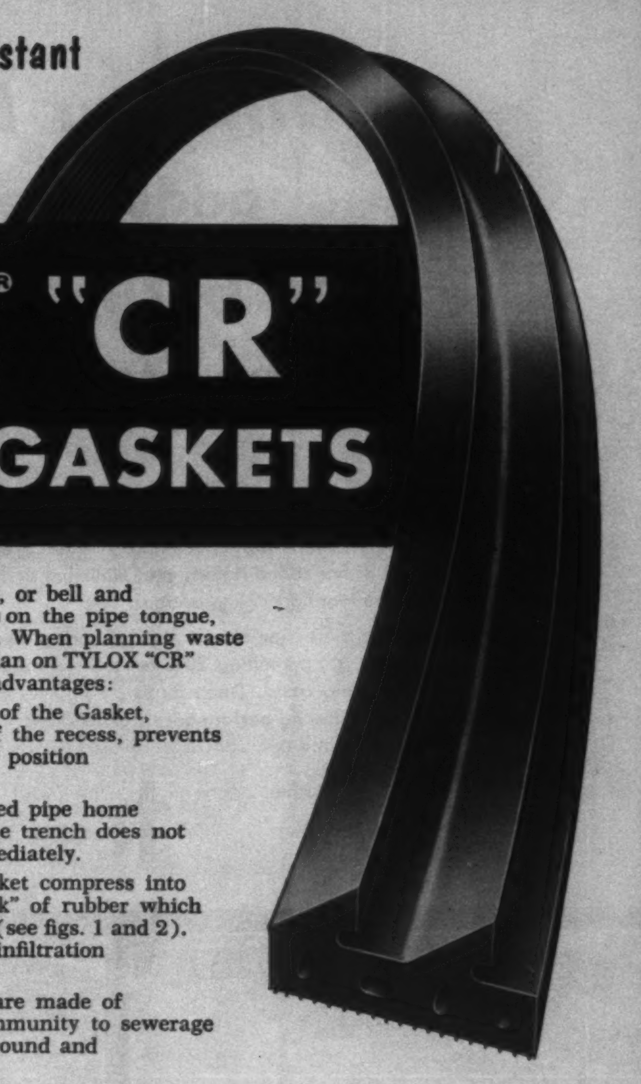
ALLIED MATERIALS CORP.

PRODUCERS, REFINERS
AND COMPOUNDERS OF
SPECIAL ASPHALT PRODUCTS

ALLIED BUILDING • 5101 N. PENNSYLVANIA • P. O. BOX 7278 • 39TH STREET STATION • OKLAHOMA CITY, OKLA.
PLANTS: STROUD, OKLA. • DETROIT, MICH. • LOS ANGELES, CALIF.

Fast, water-tight, acid-resistant coupling for **RECESSED** concrete pipe with . . .

TYLOX® "CR" *flexible* GASKETS



TYLOX "CR" Gaskets are for tongue and groove, or bell and spigot concrete pipe of all sizes having a recess on the pipe tongue, or spigot, in which the joint medium is seated. When planning waste disposal lines using recessed concrete pipe, also plan on TYLOX "CR" pipe joints, and be assured of these performance advantages:

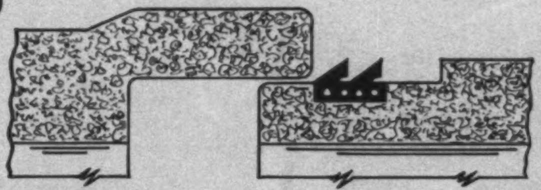
WON'T ROLL OR TWIST — the wide, flat design of the Gasket, plus support provided on both sides by walls of the recess, prevents Gasket from being rolled or twisted out of true position during coupling operations.

COUPLES IN SECONDS — Merely shoving gasketed pipe home into the line completes the joint . . . water in the trench does not delay the work . . . backfill may be applied immediately.

WON'T LEAK — Multiple sealing fins of the Gasket compress into the specially designed base to form a solid "pack" of rubber which prevents water from leaking in or out of the joint (see figs. 1 and 2). Root and sediment problems are eliminated . . . infiltration overloads on treatment plants are prevented.

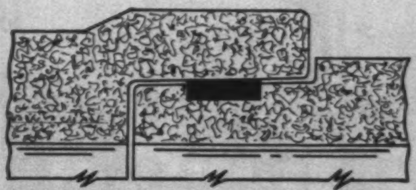
RESISTS ACID ATTACK — TYLOX "CR" Gaskets are made of rubber or neoprene specially compounded for immunity to sewerage and industrial wastes, acids or alkalies. Under ground and under compression, they outlast the pipe itself.

①



TYLOX "CR" Gasket properly positioned on recessed concrete pipe.

②



TYLOX "CR" Gasket under full compression.

TYLOX
TYPE "CR"
flexible

WRITE FOR DATA BROCHURE

Fully illustrated engineering information and installation instructions. See why there are more TYLOX Gaskets specified for low head service than all other types of Gaskets combined. Specify TYLOX "CR" Gaskets for your next recessed concrete pipe project.

HAMILTON KENT
MANUFACTURING COMPANY
KENT, OHIO
427 West Grant St. ORchard 3-9555

5151-3

CANADIAN PLANT: 10 Brussels St., New Toronto, Ont., Phone: CLifford 1-2494

CIRCLE 13 ON READER SERVICE CARD

CIRCLE 15 ON READER SERVICE CARD→

Triangular Bar System

adds Strength—Rigidity

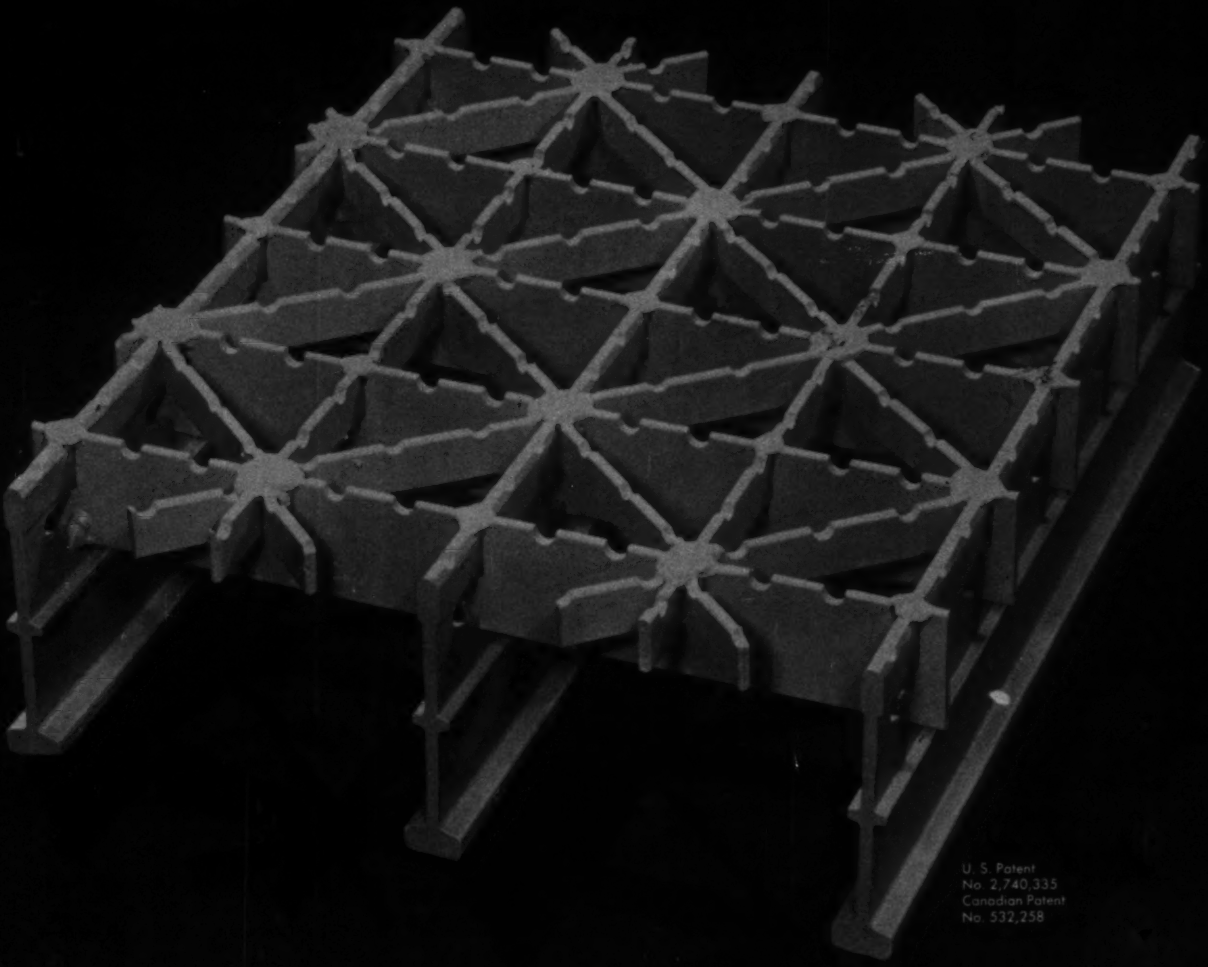
to GREULICH 4-WAY GRID

Open Steel Bridge Flooring

Look at the opposite page! See the integrally connected triangular system of bars running in four directions in the unretouched photo of a section of Greulich 4-Way Grid. They provide a flat, single-plane, serrated surface over the entire roadway to insure maximum lateral or horizontal rigidity and minimum deflection. This feature makes the grid ideal, too, for reflooring existing bridges.

Economy in field erection is here, too! Bearing members are spaced 7½" apart, instead of the usual 6", permitting 20% fewer field welds at no loss of strength. 7' 3" wide panels reduce handling costs. Deep throat, V-butt welds contact all surfaces and insure trouble-free, long lasting performance against hard surface wear and abrasion. Where a closed surface is desired over machinery or streets the grid can be filled half-depth with concrete.

For catalog and further information, write Dep't. EN-6, Kerrigan Iron Works Company,
Nashville, Tennessee



U. S. Patent
No. 2,740,335
Canadian Patent
No. 532,258

Far Left: No interruption of traffic here. Due to Greulich 4-Way Grid's half road-width panels one lane is open at all times.

Left: Panels of Greulich 4-Way Grid are easily swung into place for faster installation. True alignment is assured, too, as the grid is made in precision jigs.

KERRIGAN
IRON WORKS COMPANY
Nashville, Tennessee

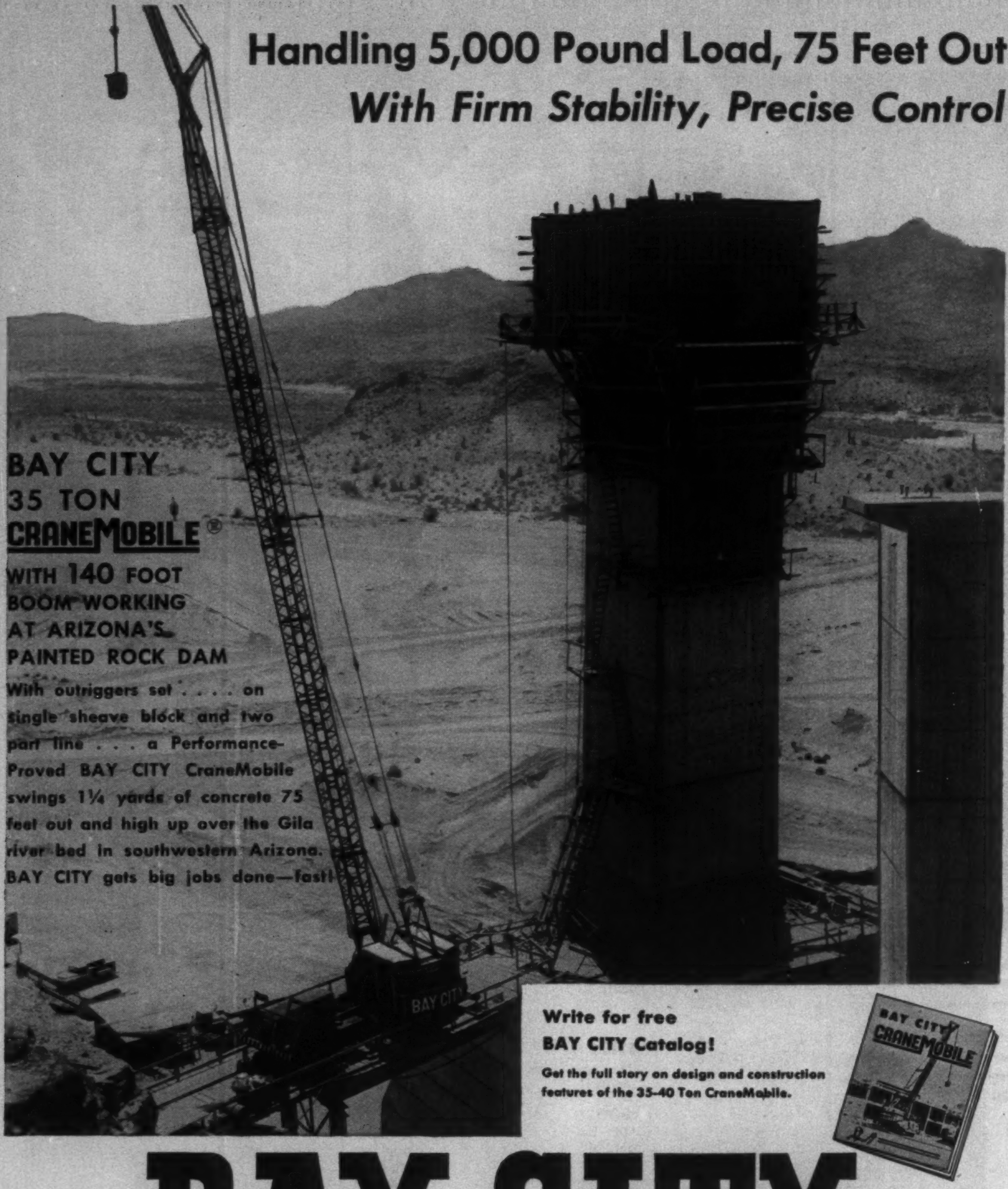
KERRIGAN Weldforged PRODUCTS

GREULICH 4-WAY GRID — GRATING & TREADS
STREET AND HIGHWAY LIGHTING STANDARDS,
MAST ARMS AND BRACKETS

Write NOW for FREE catalogs . . . Dep't. EN-6

Subsidiary of ROCKWELL—STANDARD Corporation

Handling 5,000 Pound Load, 75 Feet Out
With Firm Stability, Precise Control



**BAY CITY
35 TON
CRANEMOBILE®
WITH 140 FOOT
BOOM WORKING
AT ARIZONA'S
PAINTED ROCK DAM**

With outriggers set . . . . on single sheave block and two part line . . . a Performance-Proved BAY CITY CraneMobile swings 1¼ yards of concrete 75 feet out and high up over the Gila river bed in southwestern Arizona. BAY CITY gets big jobs done—fast!

**Write for free
BAY CITY Catalog!**

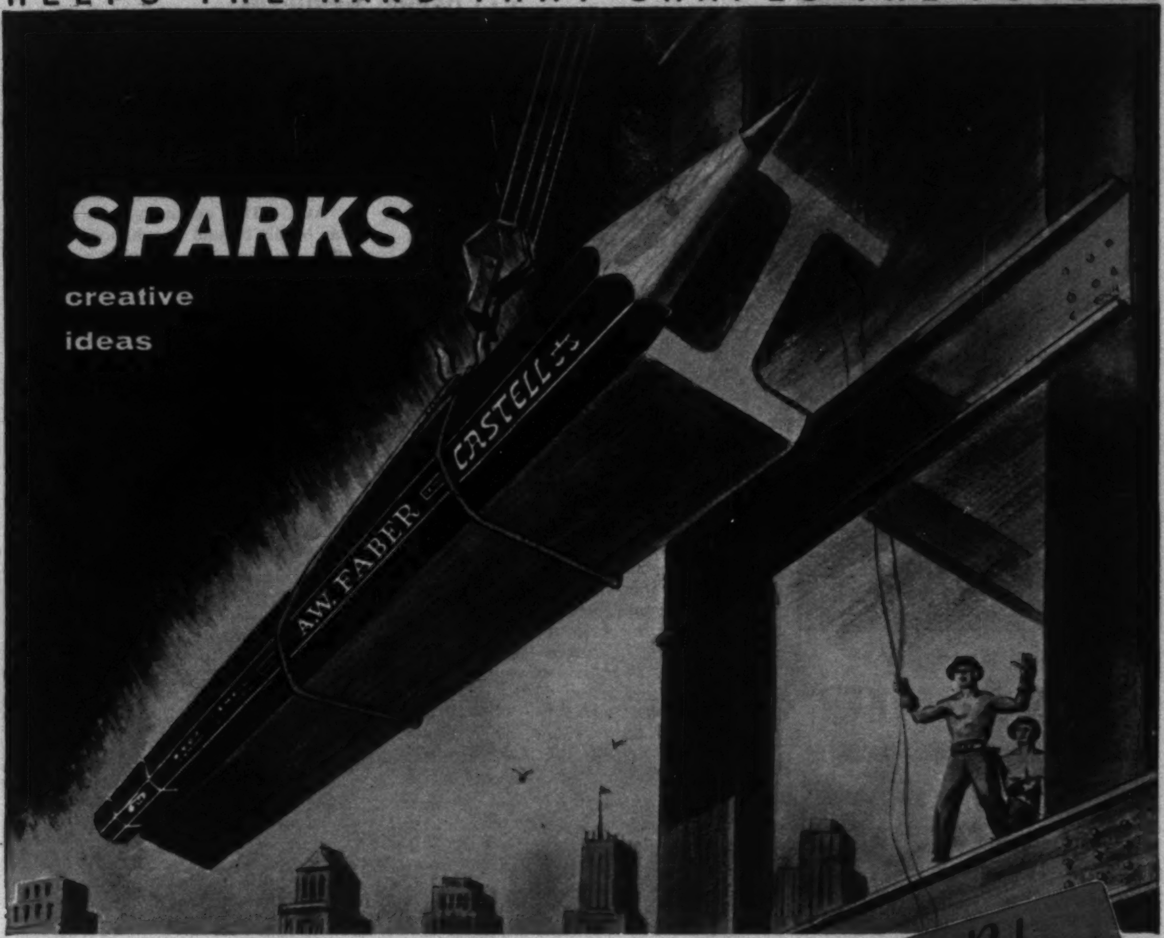
Get the full story on design and construction features of the 35-40 Ton CraneMobile.

BAY CITY
THE WORLD'S BEST BUILT SHOVELS AND CRANES

BAY CITY SHOVELS INC., BAY CITY 1, MICHIGAN
(A subsidiary of the Unit Crane & Shovel Corp.)

CIRCLE 16 ON READER SERVICE CARD

HELPS THE HAND THAT SHAPES THE FUTURE



The creative man's brain is awhirl. Instinctively his hand reaches for his Castell pencil. The brain child is locked within. Now it must be brought to life on a plane surface to conform to the nebulous image. Castell, the world's finest drawing pencil, is the trusted intermediary. Because it is itself conceived and produced with the care and skill of a precision instrument, Castell is the partner of progress the world over. To a creative man, Castell is an unquestioned fact of life.

Magic-Rub
AW FABER-CASTELL
1954 U.S.A.

#9000 CASTELL Pencil with world's finest natural graphite that tests out at more than 99% pure carbon. Exclusive microlette mills process this superb graphite into a drawing lead that lays down graphite-saturated non-feathering lines of intense opacity for cleaner, more durable originals and clearer, sharper prints. Extra strong lead takes needlepoint sharpness without breaking or splintering. Smooth, 100% grit-free consistently uniform pencil after pencil, in full range, 8B to 10H.

#9007 CASTELL Pencil with Eraser.

CASTELL Pencils and Leads draw perfectly on all surfaces, including Cronar and Mylar base films. Give graphite-saturated lines, easy to erase, no ghosting — excellent reproduction.

***CASTELL** Rubberless MAGIC-RUB ERASER soaks up graphite without abrading drawing surfaces, and residue rolls off. Leaves no "oil" stain or "ghost." Tests highest in ease of use, line removal and non-smudging. Tests first on Cronar and Mylar base films. For all papers and vellums.*

#9800SG CASTELL LOCKTITE TEL-A-GRADE Holder, perfectly balanced, lightweight, with new no-slip functional grip that lightens finger pressure without slipping, and *relieves finger fatigue.* Unique degree lead indicating device.

#9030 CASTELL Refill Lead, matching exactly #9000 pencil in quality and grading, degrees 7B to 10H, packed in reusable plastic tube with gold cap.

Many other styles and colors of CASTELL Pencils Holders and Refill Leads.

A.W.FABER-CASTELL 41-47 Dickerson Street, Newark 3, N. J.

A.W. FABER CASTELL DRAWING REFILL LEAD 9030

CASTELL USA LOCKTITE TEL-A-GRADE 9800SG
H

deals directly with the mechanical specialty contractors on his job, whether it be a single or separate contract job. Such contracts are invariably made through his architect or engineer who is coordinating the job, or through the general contractor. Thus the "remote control" which the brochure claims results from the single contract system is no more "remote" than under the separate contract system.

- **NAPC**—"When separate mechanical contracts are used, a better class of mechanical contractor is attracted to a job."

AGC—The single contract system gives the owner just as much opportunity to receive quality workmanship as the separate contract system does.

- **NAPC**—"The separate mechanical contract method places responsibility for the various phases of construction squarely where it belongs—with the man or firm who is familiar with, and doing, the work."

AGC—The single contract system unifies ultimate responsibility for a construction project in the general contractor who, in turn, is responsible to the owner. In actual operations, working responsibility for various phases of construction remains the same under the single contract and the separate contract systems—it rests on the firm that is doing the work.

- **NAPC**—"When the owner fails to retain the right to select his mechanical contractor, he may easily find that the work has been awarded to some distant and unqualified favorite of the middleman."

AGC—In the first place, the owner can select his subcontractor just as easily under the single contract system as with separate contracts. In the second place, the obligation of subcontractors to the owners for good work is just as great under the single contract system as with separate contracts.

- **NAPC**—"The architect and engineer have fewer job headaches under the separate contract system."

AGC—The experience of architects and engineers has been to the contrary—that with separate contracts they are called upon to perform a much greater amount of work, and they expect to be paid for it.

- **NAPC**—"The reliable, qualified contractor, by not being barred from contact with the architect and engineer, is in an excellent position to cooperate in securing a good workable installation for the owner and avoiding unnecessary confusion."

AGC—In the planning of any project, the advice and opinions of all qualified persons are of value, and under the single contract system a general contractor is able, through conferences with all his subcontractors, with the architect, engineer and owner, to take advantage of such expert opinion. However, in the execution of the work there can be no substitute for the undivided authority and financial responsibility that a single contract gives to a general contractor.

- **NAPC**—"The architect and engineer enhance their own reputations, by using separate mechanical contracts."

AGC—The architect and engineer can hardly be said to enhance their reputations when, for any of a variety of reasons that may develop with separate contracts—lack of coordination of work, differences in labor policies which can cause serious delays, etc.—a job is not completed on schedule or according to specifications. The single contract system avoids many of these dangers by giving the general contractor full authority to coordinate all work on the job and to insist on uniform practices, including labor policies, by all subcontractors on the project.

- **NAPC**—"The general contractor has fewer headaches with separate contracts. The . . . separate mechanical contract system removes the problem which frequently confronts the general contractor when he must choose between the low sub-bid of a reputable, reliable mechanical contractor and the greatly lower bid of a 'cheap' operator whose irresponsibility and incompetence are known."

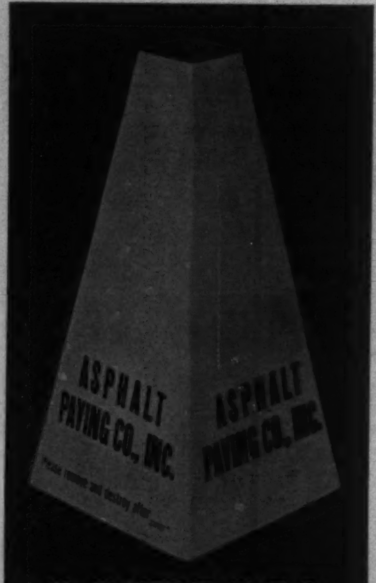
AGC—No competent and conscientious general contractor would prefer separate contracts which create divided responsibility and authority. Frequently, a general contractor who bids on a separate contract job will include in his bid a substantial contingency item to compensate for the added difficulties that he knows will result from separate contracts. As for choosing between the low sub-bids of reputable subcontractors and those who may be less responsible, this is one of the general contractor's rightful responsibilities, one that he is equipped through long experience and first-hand knowledge to perform better than an owner, engineer or architect.

- **NAPC**—The NAPC brochure contains six quotations from executives of large industrial firms tending to show they favor award of separate contracts.

AGC—All of these quotations are from letters submitted in 1955 to the Senate Judiciary Committee. The committee received letters from 28 industrial firms and public agencies relating to their practices in awarding construction contracts. Of these 28, only five indicated that they preferred to use separate contracts, and all five had full-time construction divisions, and, in some cases, design divisions, to administer their respective construction programs. The remaining 23 firms or public agencies stated that they preferred the single contract system, some with certain variations.

Obviously the owner may choose the method he believes most beneficial, and

(*Reader Comment continued p. 25*)



NEW!

CORRUGATED BOARD

DISPOS-A-MARKER*

SAVES YOU MONEY—TIME—TROUBLE!

This bright, new corrugated paving marker was specially designed to replace more costly, permanent metal or rubber markers. *Now* with DISPOS-A-MARKER* you get—

LOWER COST—a fraction of the price of high-priced, permanent markers!

EASIER HANDLING—light enough to hold in the palm of your hand!

SHIPS FLAT—stores easily, neatly, sets up rigid in seconds with self-locking bottom!

BRIGHT YELLOW—highly visible both day and night!

ADVERTISING—your name prominent on every job site!

STURDY—just drop a rock through the top opening and it stays put!

SELF-DISPOSABLE—write the "throw away" date—and save return trips!

New DISPOS-A-MARKER is available *now* from St. Regis® plants all over the country. For earliest delivery, mail this coupon today!

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New York 17, New York

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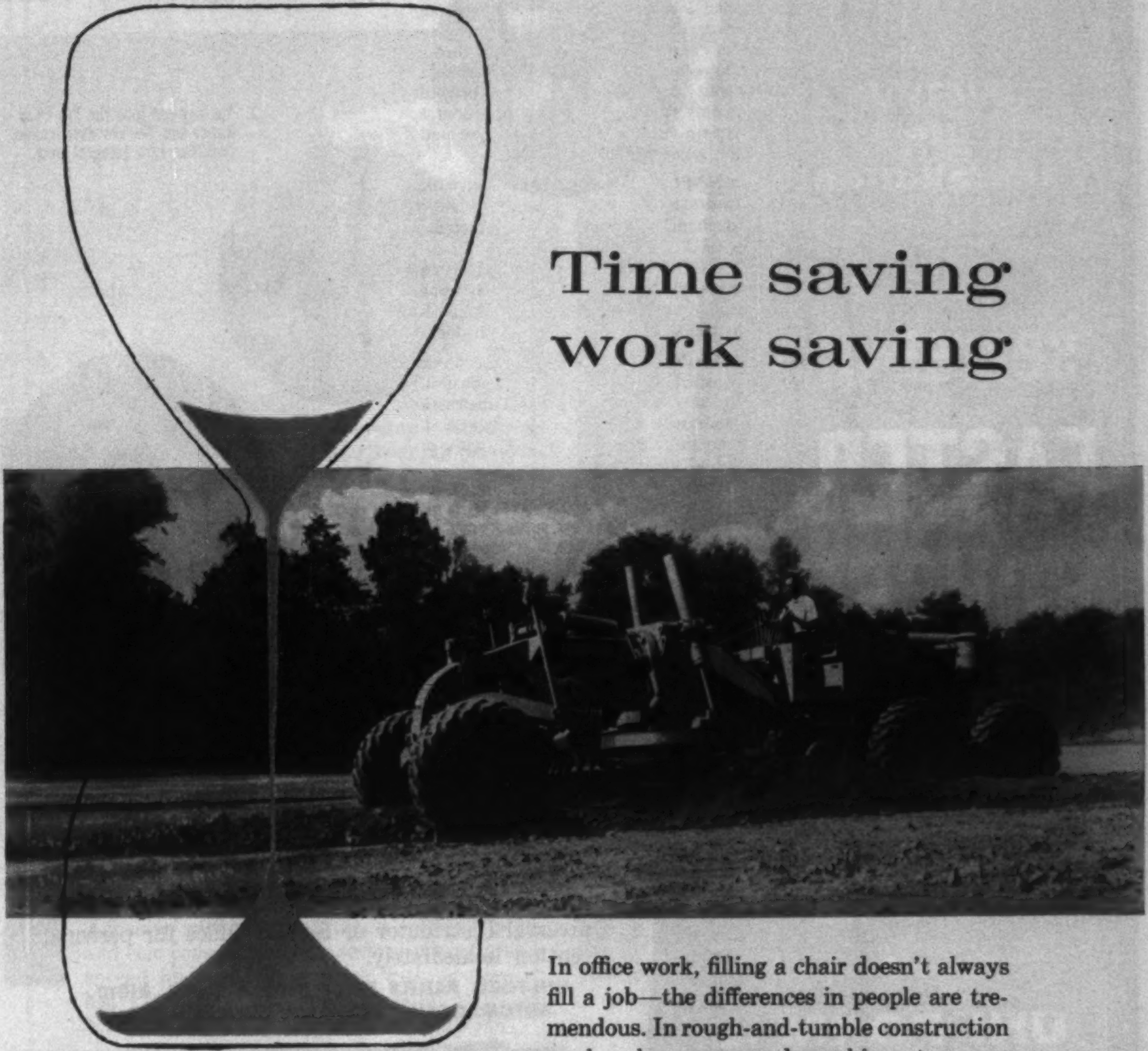
CIRCLE 18 ON READER SERVICE CARD



Time saving work saving

In office work, filling a chair doesn't always fill a job—the differences in people are tremendous. In rough-and-tumble construction work, where men and machines team up against rough terrain and bad weather in a battle to keep jobs ahead of schedule, the story's the same. When you save time or save work, you save money on today's close-margin contracts. That's why you'll do well to put a Huber-Warco—not just any grader—on your jobs in the competitive '60's. You can't afford to settle for less. Distributors Throughout the Free World.

HUBER-WARCO COMPANY
Marion, Ohio

simple
tie
installation...

secret of FASTER CONCRETE FORMING

SECONDS
TO INSTALL
UNI-FORM TIE
AND ASSEMBLE PANELS

1. UNI-FORM Tie Loop placed in square tie hole of Panel.

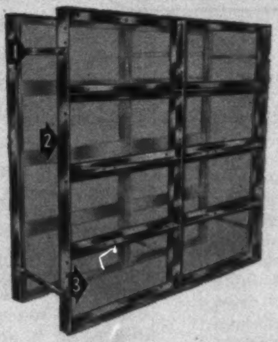
2. Tie Key set into the Tie Loop. Panel and Tie are now locked together into integral unit.

3. Next UNI-FORM Panel is placed in position. Tie Loop automatically enters square tie hole. Key is dropped in—assembly is complete. NO COMING BACK TO "FISH" TIES.

When you can tie and lock two concrete form panels in a few seconds, you're forming concrete fast! This is exactly what you can do with the UNI-FORM Panel System—the fastest system of forming concrete ever developed.

Faster tieing is only one of many UNI-FORM Panel features that makes them *the* pre-fab forms contractors are using on every kind of concrete construction. Write for the UNI-FORM Panel System Catalog and full details . . . or, call your nearby Universal Distributor or Branch Office for personal attention immediately.

UNI-FORM PANELS ERECT INTO A TIGHT, RIGID, AUTOMATICALLY ACCURATE CONCRETE FORM



1. Ties spread, lock UNI-FORMS into a form with automatically accurate wall thickness.
2. Steel frame provides structural strength and rigidity. Minimum alignment and bracing.
3. Best Exterior Grade Plywood face provides nailing surface. Easily turned for further reuses.

"Products from the Gold Tool Room"

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE · CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:
ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

Concrete Adhesives With THIOKOL Liquid Polymer

MAKE LITTLE OF BIG REPAIRS

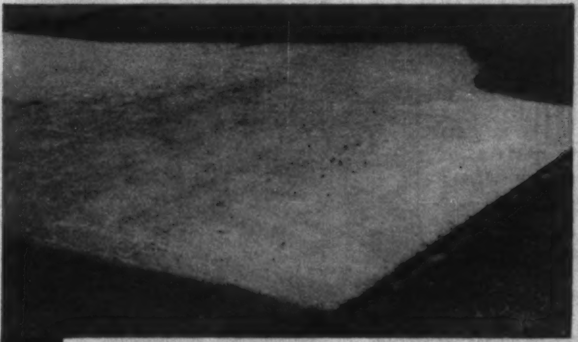
PROOF POSITIVE

1. Scaled highway surfaces are being lastingly repaired in only a few hours by bonding new concrete to old with adhesives containing THIOKOL polysulfide polymer. The bond is stronger than concrete itself. Field and lab tests prove it.

2. Only loose and damaged concrete—not the whole slab—need be removed. The adhesive also cuts time and costs in repairing spalled areas, cracks, pot holes, in skidproofing and sealing, in fastening traffic markers. Results are long-lasting.

3. Adhesive with THIOKOL liquid polymer—made and sold commercially by several processors—is spread on prepared surface with brooms or heavy brushes. Thirty minutes later, while adhesive is still tacky, new concrete is poured.

4. Concrete is laid conventionally. It can also be worked out to a feather-edge without danger of later failure—so tenacious is the adhesive bond of new to old concrete.



5. Repair completed—road open as soon as concrete is cured. Similar repairs, in service since 1953, show no damage or effects of weather, wear and tear, even on the busiest highways.

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FOR MORE INFORMATION: Mail Coupon to Dept. CA-51
Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton 7, N. J.

Please send me THIOKOL'S helpful booklet "A New Type of Concrete-to-Concrete Bonding." Tells how to reduce remedial time and costs, and to keep roads in service.

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Firm____________________

Street____________________

City__________ Zone____ State________

CIRCLE 21 ON READER SERVICE CARD

LET'S TALK TURKEY

and clear up some facts about MASONRY SAWS

Don't be misled! If a 14″ masonry saw meets your requirements, you penalize yourself severely by buying a 20″ universal saw. It's very simple. The right speed for a 20″ blade is **not** the right speed for a 14″ blade!

Independent laboratory tests prove you get **32.7% longer life** out of a 14″ blade when you use it on a 14″ saw operating at the proper speed. This can easily add up to hundreds of dollars in savings on one job alone.

Clipper SuperMatic 14″ Hi-Speed is the most efficient, trouble-free masonry saw ever built. It's **the** saw for the great majority of masonry saw users. But, Clipper realizes that certain jobs call for capacity beyond 14″; for instance, a large block job where you want to cut in a single pass. That's why Clipper also offers you the SuperMatic 20″ to 14″ universal saw.

Only Clipper offers you this choice—and on FREE TRIAL! Clipper, with its Engineering Leadership by men who originated the masonry cutting industry and know it best, bring you the highest quality obtainable in masonry and concrete cutting saws and blades—diamond core bits and drills. Call Collect Today for a Demonstration on your job.

HI-SPEED SUPERMATIC 314
14″ CAPACITY

SUPERMATIC 300
20″ TO 14″
CAPACITY

Clipper
MANUFACTURING CO.

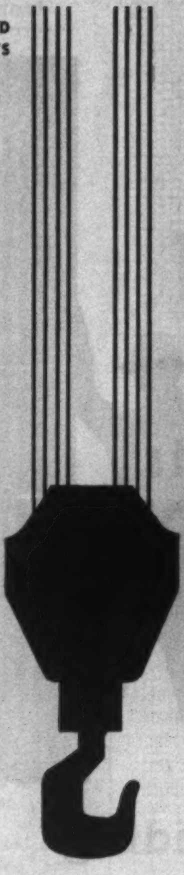
General Offices and Factory:
2812 Warwick, Kansas City 8, Missouri
Sold Direct from Offices and Warehouses Coast to Coast
Factories in England—France—Germany—Italy

Ask About Clipper's Liberal TRADE-IN OFFER NOW IN EFFECT
Write, wire or call collect now for full details.

251X

IN HYDRO AND
FLOOD CONTROL PROJECTS

WEIGHT LIFTING MADE EASY



Typical outdoor powerhouse semi-gantry crane, 160 ton capacity, 62' span at TVA's Boone Dam, Tenn. Yuba designs, builds and erects all types of cranes, including gantry and semi-gantry, bridge, unloading and material handling, floating and jib cranes. Also, derricks, hoists and launching towers for defense ordnance.

Yuba takes the complete responsibility—through design, fabrication and erection

With cranes specially designed and custom-built by Yuba to the requirements of the job, big lifting problems *are* made easy. All the important skills of crane construction, developed through scores of standard and unusual assignments, have resulted in a special know-how at Yuba that produces top-notch results in engineering, fabrication, testing and erection—a complete service with a single responsibility.

Every Yuba crane incorporates many proven features that are quickly demonstrated in ease and accuracy of operation, modern appearance, and low upkeep costs.

When you need custom equipment with lifting capacities of 5 to 1,000 tons, it will pay you to talk with Yuba Engineers. Write for free copy of Bulletin No. HY-51 on Yuba Cranes and Hydroelectric Equipment, today.

Call on Yuba for everything in engineered hydroelectric steel equipment—from forebay to tailrace—including bridge and gantry cranes, hoists, intake, spillway and draft tube gates, bulkheads, trashracks and rakes, penstocks and liners, valves, structural steel and rebar.

specialists in custom cranes
and hydroelectric steelwork

YUBA MANUFACTURING DIVISION • *Benicia, Calif.,*
YUBA-BEDFORD DIVISION • *Bedford, Ind.*

YUBA CONSOLIDATED INDUSTRIES, INC.

Sales Offices in Atlanta • Buffalo • Chicago • Cleveland • Houston • Los Angeles • New York • Philadelphia • Pittsburgh • San Francisco • Seattle

You never paint V-Corr roofing and siding

...YOU WASH IT WITH RAIN!

V-Corr is the only heavy-duty corrugated steel protected with a ceramic skin. It gives you almost endless years of service—and it's maintenance-free.

The colored coating is fused into the metal at temperatures over 1500°F. As a result, steel and coating become a single mass.

You never have to paint V-Corr—
weather won't wear it; colors are permanent.

You never have to rustproof V-Corr—
corrosion can't attack it.

You never have to fireproof V-Corr—
it's rated non-combustible.

You need no special tools for V-Corr—
you can cut it, drill it, stack-drill it.

If "special problem areas" have been running up your costs for roofing and siding, V-Corr is your ticket. It's unaffected by salt air, moisture, steam. It's resistant to industrial fumes, gases, most corrosive chemicals.

Look into it. It's a money-saver.

V-Corr Ceramic-Coated Roofing and Siding is an exclusive product of

THE BETTINGER CORPORATION
Milford, Massachusetts • Toledo, Ohio

IN CANADA:
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Kockums Emaljerverk, Ronneby, Sweden

V-Corr Bulletin 30 brings you specifications, engineering data, and erection procedures. Write us for a copy

we are confident that when the facts are available to the owner, he will in the great preponderance of instances find the single contract system the best means of obtaining an efficient and economical construction job. The AGC is speaking out in the current controversy only because it is concerned that the true facts might be obscured by exaggerated claims made by promoters of separate contracts.

William G. Dooly
Manager, Public Relations & Publications, Associated General Contractors of America
Washington, D. C.

Quantity Surveys

Sir—The editorial "Not The Contractor's Job" (ENR Apr. 28, p. 116) confirms that inspecting, testing and certifying are functions belonging to the designer, not the contractor engaged in building a structure to meet specific requirements. It is obvious that the contractor would be least apt to discover errors, omissions and negligence that would disqualify his work and cause him loss financially and in reputation.

There are also other functions that are "not the contractor's job," such as the preparation of the quantity analyses as the basis for bidding and accepting contracts. The provision of a construction quantity and quality analysis as the basis for bids and contracts (a) reduces estimating and bidding costs, (b) provides a scientific basis for comparing bids and awarding contracts, (c) eliminates the economic risks of buyer and seller, and (d) increases efficiency and eliminates waste in surveying, designing and constructing operations, thereby reducing costs generally.

G. Szmak
Construction Surveyors Institute
New York, N. Y.

Advice on Inspection

Sir—The Concrete Industry Board of New York read with considerable interest the editorial, "Not the Contractor's Job" (ENR Apr. 28, p. 116), which endorsed the concept that designers, not contractors, should engage testing laboratories on construction projects.

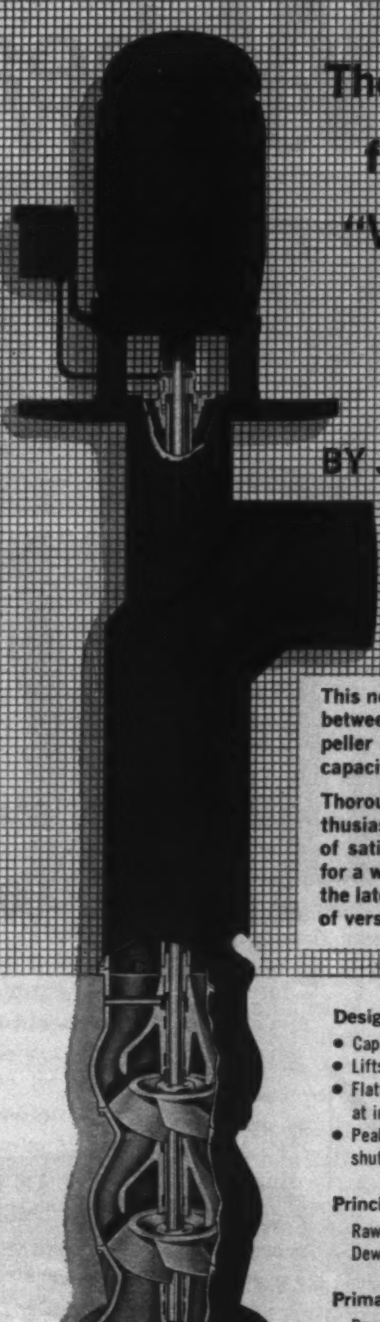
We should like to call attention to an excerpt from the CIB "Manual of Recommended Practice for Inspection and Testing of Concrete Materials and Concrete":

"The principles which the Committee believes should be followed in the inspection and testing of concrete and concrete materials are listed below:

"1. The owner or architects, and not the contractor, should employ a qualified testing laboratory to carry out the requirements of the specifications.

"2. The scope of the services to be

(*Reader Comment continued p. 32*)



The pump that fills the "Vital Gap"

NEW MIXED-FLOW BY JOHNSTON

Large capacities at medium lifts

This new Johnston fills the "vital gap" between low head—large capacity propeller pumps and high head—smaller capacity regular turbines.

Thoroughly field-tested and already enthusiastically recommended by a score of satisfied users, it is now available for a wide range of applications and is the latest addition to the Johnston line of versatile vertical pumps.

Design Features:
- Capacities exceeding 100,000 gpm.
- Lifts from 20 to 60 feet.
- Flatter hp curve means less overload at increased heads.
- Peak performance at 40 to 60% of shut-off head.

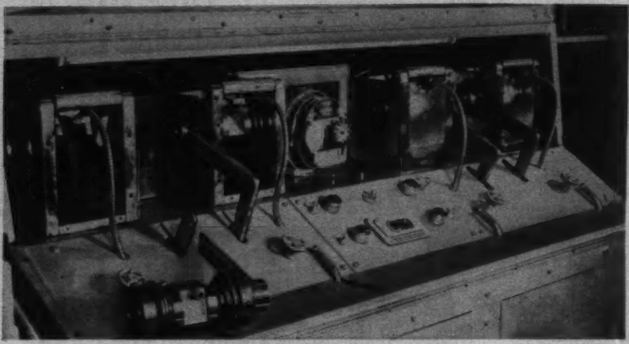
Principal Applications:
Raw water intake; Low lift transfer; Dewatering; Spray pools; Sewage effluents.

Primary Users:
Power plants; Sewage treatment installations; Flood control; Land reclamation; Steel mills, refineries, chemical plants, etc.

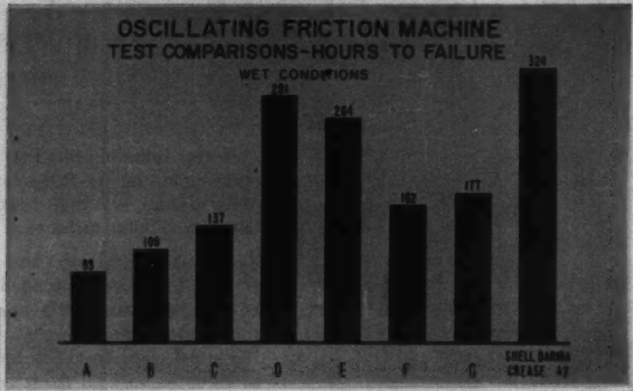
For complete details and specifications, call or write your nearest Johnston distributor or contact the factory direct.

JOHNSTON PUMP COMPANY
A DIVISION OF THE YOUNGSTOWN SHEET AND TUBE COMPANY
3272 East Foothill Boulevard, Pasadena, Calif.
Branch Warehouses: Roswell, N. M.; Hastings, Neb.; Pecos, Texas; Idaho Falls, Idaho

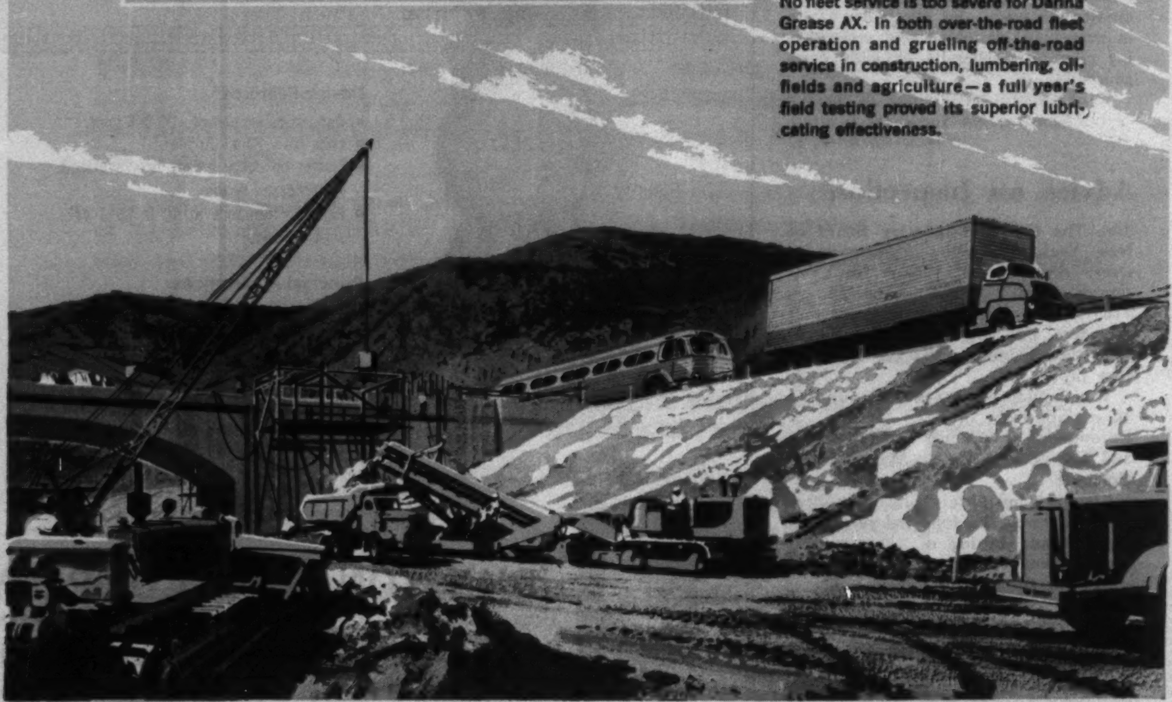
NEW heavy-duty sets



The Shell Oscillating Friction Machine that proves the superior effectiveness of Shell Darina Grease AX under both wet and dry conditions is shown.



No widely used grease—not even the best premium, multi-purpose greases—can compare to the "hours to failure" record set by Darina Grease AX. Chart shows results of the more severe "wet" condition test.



No fleet service is too severe for Darina Grease AX. In both over-the-road fleet operation and grueling off-the-road service in construction, lumbering, oilfields and agriculture—a full year's field testing proved its superior lubricating effectiveness.

CIRCLE 26 ON READER SERVICE CARD

automotive grease endurance test record

New findings about Shell Darina Grease AX change maintenance practice for heavy-duty fleets

The toughest job for automotive greases is in shackle-type bearings where the movement is confined to short arcs of 15 degrees or less. Until now, however, most machines that evaluated greases used *rotating* bearings.

The Shell OFM Test (Oscillating Friction Machine Test) equipment, shown on left, duplicates severe *oscillating* service conditions. Bar chart shows how one grease—Darina® Grease AX—outlasts other greases.

Shell Darina Grease AX is a new development that is based on a waterproof MICROGEL* component. Contains *no soap!* Developed by Shell Research to give these qualities:

WASHOUT RESISTANCE. In ASTM water washout test, loss of Darina Grease AX was only one percent compared to washout rates as high as 12% for conventional multi-purpose greases.

WATER ABSORPTION. Tests prove that even water saturation cannot destroy the lubricating efficiency nor metal adhesion properties of Darina Grease AX.

MECHANICAL STABILITY. Darina Grease AX won't liquefy and run out. Its stability is unexcelled by any other type multi-purpose lubricant.

Road Service Confirms Tests

Results are in from sixteen major operators of heavy-duty equipment covering 30 million miles and a wide range of service. Report after report shows how Darina Grease AX extends wheel bearing and chassis lube mileage.

Over 1000 automotive units were used. The results in all cases showed that Darina Grease AX provided superior lubrication for wheel bearings, shackles, kingpins, steering linkages, and other chassis parts.

Shell Darina Grease AX is specially formulated to lubricate heavy-duty equipment that operates under adverse conditions of terrain and climate.

No matter what type of heavy-duty fleet vehicles you operate, you will want the full story on Shell Darina Grease AX. Write or phone today.

*Trademark

SHELL OIL COMPANY

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100 Bush Street........................San Francisco 6, California
In Canada: Shell Oil Company of Canada, Limited,
505 University Avenue........................Toronto 2, Ontario

SHELL

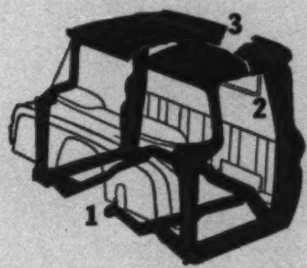
CHEVROLET

PROOF THAT CHEVY'S BIG NEW CABS ARE BUILT FOR A BETTER DAY'S WORK!

"THESE TRAILS WOULD SHAKE THE CAB OFF AN ORDINARY TRUCK... BUT NOT OUR CHEVY"

Few trucks are subjected to the body-wracking beatings that are part of a day's work for this Chevrolet Series 60 pulpwood hauler, owned by J. E. Fox, North Carolina logging contractor. As Bobby Fox, a partner in the business points out, "Loaded full-up with pulpwood, we drive right over stumps and potholes you'd think would tear the truck to pieces. These trails would shake the cab off an ordinary truck, but not our Chevy. You can always replace chassis components, but when the cab goes, you have to buy a new truck. Chevies are built to hold together longer. That's why we buy 'em."

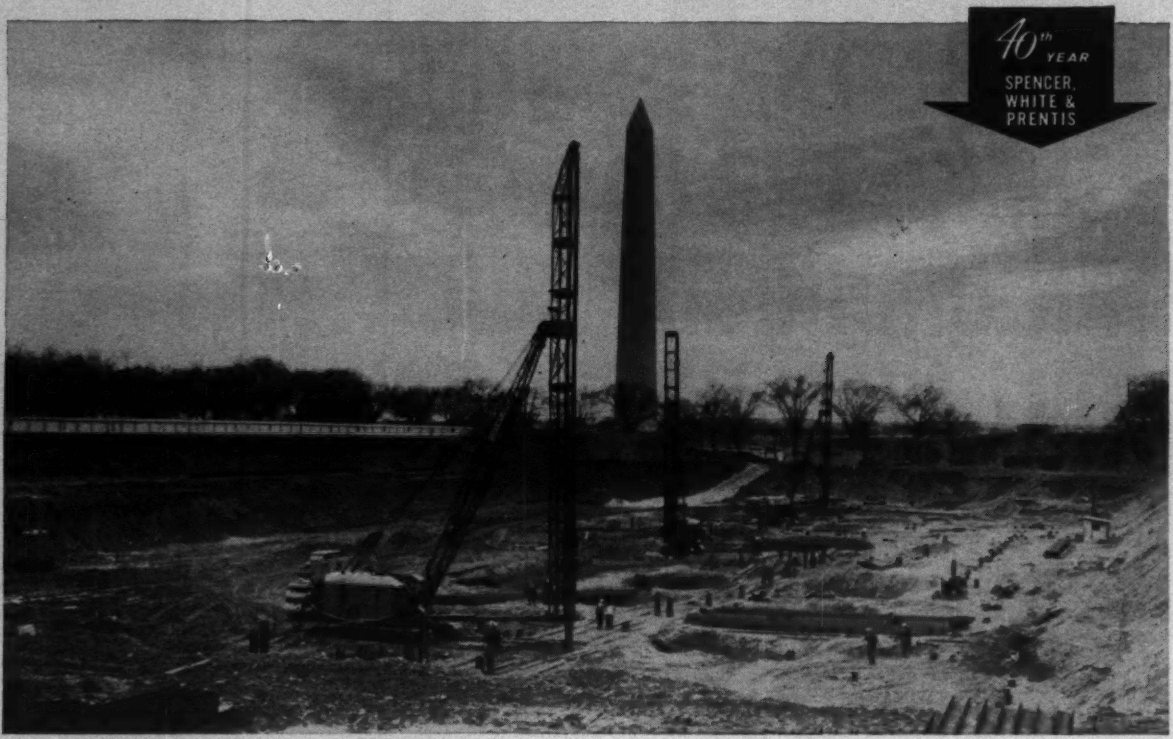
■ *No matter where* you haul, you'll profit by the new toughness that's built into Chevrolet's truck cabs for '60. You'll benefit from a cab that's constructed to stand up to slam-bang runs over rough terrain, a cab that stays in A-1 shape years longer. Here are some of the ways in which Chevy assures this tight, maintenance-minimizing performance: **1.** Extra reinforcement where it counts reduces vibration; provides a solid foundation for cab sheet metal. Tough new longitudinal sills reinforce the underbody. **2.** Extra-sturdy door openings—box-section pillars and sills assure *lasting* alignment. Doors stay weathertight with a minimum of maintenance. **3.** New double-walled roof panels are sturdier than ever. Husky box-section pillars provide the solid roof support that means greater safety and maximum cab strength. ■ And there's a world of comfort for you, too. A *wide* seat, for instance, with a comfortable foam cushion and springs that soften the ride yet give you extra support where it's needed. And there's more head, hip, shoulder and leg room for husky drivers . . . a horizon-wide windshield with 26% more glass area, a new see-at-a-glance instrument panel, new conveniently suspended pedals. ■ First chance you get, visit your Chevrolet dealer and drive one of these new Chevies. Feel how Torsion-Spring Ride takes the bounce out of bumps; learn for yourself why it will lengthen truck life and lower maintenance costs. Check up on Chevy's famous gas-saving 6-cylinder and V8 engines. Then you'll know, for sure, why you can expect thousands of extra miles out of a Chevy; why you can be sure of more work per day at least expense. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

CIRCLE 29 ON READER SERVICE CARD

Drive 145,000 ft. of H-Beam Piles



Owner: General Services Administration, Washington, D. C.
Architects: McKim, Mead & White, New York City
Consulting Engineers: Severud, Elstad & Krueger, New York City

Foundation for Smithsonian Institution's new addition marks first use of H-beam bearing piles for one of Washington's monumental buildings

The above-pictured H-beam foundation—largest in the nation's capital—is one of many installed by Spencer, White & Prentis in that city. The work awarded to us included the dewatering and excavation as well as the bearing piles—2,800 H-beams driven to a depth of 52 ft.

With penetration required through silt, gravel and decomposed rock, H-beams proved most economical and were selected over cast-in-place piles and pipe piles, both of which had also been specified.

Prior to excavation, 2 predrainage sumps lowered the ground water 21 ft. on the 300 x 600-ft. lot located near the Potomac River at the site of an old canal.

Descriptive Literature on Request

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Why it pays to shopcoat steel shapes with X-L-O Primer...

1. X-L-O minimizes the need for costly pre-primer cleaning.

2. It uniformly covers even irregular surfaces.

3. X-L-O dries fast... permits 24-hour shipment of fabricated parts, regardless of season.

4. You get maximum protection against corrosion—in transit, during erection, and for life of structure.

5. X-L-O improves resistance to weather wear.

- **Made with the finest extracted linseed oil,** Pittsburgh's X-L-O possesses all of the desirable low-surface-tension characteristics of regular raw linseed oil. And it is comparable or superior in steel "surface-wetting" properties, the most essential requirement of a shopcoat over ordinary mill-scale-bearing structural steel.

- **X-L-O is available** in combination of red lead and iron oxide, or 100% red lead.

- **For proof** Pittsburgh X-L-O Primer can give *your* steel shapes greater protection and longer life, write, wire or phone Pittsburgh Plate Glass Company, Industrial Finishes, 1 Gateway Center, Pittsburgh 22, Pa.

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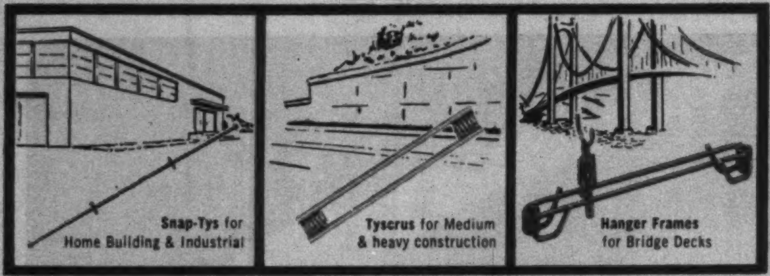
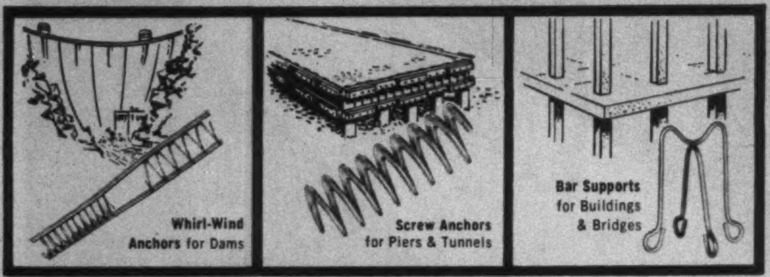
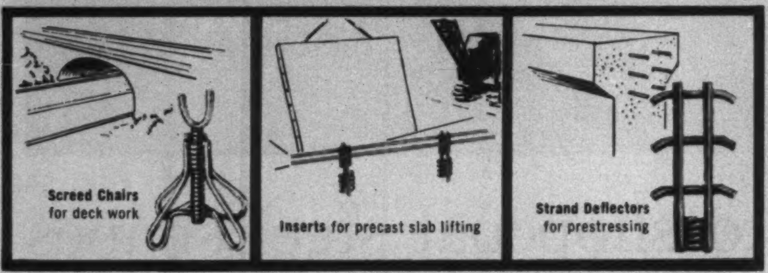
CIRCLE 31 ON READER SERVICE CARD



For every kind of concrete construction



there's a dependable Richmond product!



Richmond has learned, through years of practical experience and research, how to design and produce the most effective and economical form ties, anchors, inserts and accessories for every conceivable kind of concrete construction.

All Richmond-engineered products, and there are more than 400 in the complete line, are designed to provide the extra strength that assures a safe, dependable forming job while saving time and money.

In addition, Richmond's field representatives and Technical Department can help you with any problem you might encounter in planning your form work . . . and will provide you with estimates, "take-offs" and material specifications on request.

Richmond's line of laboratory-tested form ties, anchors, inserts and accessories is the largest—in the field. It provides you with one source for all your concrete forming needs . . . ask for, and insist on "Richmond".

For complete information about Richmond's full line of quality products for concrete constuction—or assistance with any specific concreting problem, write to:—

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SCREW ANCHOR CO., INC.
INSIST ON RICHMOND
. . . AND BE SURE IT'S RICHMOND

Main Office: 816-838 LIBERTY AVENUE, BROOKLYN 8, N. Y.
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provided by the testing laboratory shall be specifically defined.

"3. As a professional service the laboratory should not be engaged on the basis of competitive bidding.

"4. A separate and detailed section of the specifications should be prepared to cover the inspection, testing and reporting requirements.

"5. The laboratories shall be adequately equipped and shall provide experienced and qualified personnel to carry out such responsibilities as may be delegated to them."

Thus, the Concrete Industry Board is in complete agreement with the procedures advocated by your editorial.

JOHN J. MANNING
Managing Director
Concrete Industry Board, Inc.
New York, N. Y.

Not a Conviction

SIR—In your article entitled "Court Convicts Dam Designers" (ENR Mar. 17, p. 26) you make inaccurate statements concerning court action in setting responsibility for the failure of Vega de Tera Dam (ENR Jan. 15, 1959, p. 28).

The article says the director and three staff engineers of the Moncabril Power Co., owner of the dam, "were found guilty" of neglect and insufficient construction supervision; also that "the verdict" came as a surprise; and that the engineers are "expected to appeal"; further that the court in Zamora, "scene of the trial," required the company to post a bond to cover possible awards in pending damage suits.

Speaking for several of the engineers concerned, I must inform you that this is false. At this stage, there can be no declaration of guilt, no verdict, no final judgment, no appeal to a higher court—because everything is before the court, under judgment, and subject to the findings of the complete investigation now being made. There has been no judgment of responsibility.

Statements to the contrary damage the professional prestige and standing of the individuals concerned and mislead people who recognize these individuals from the published accounts.

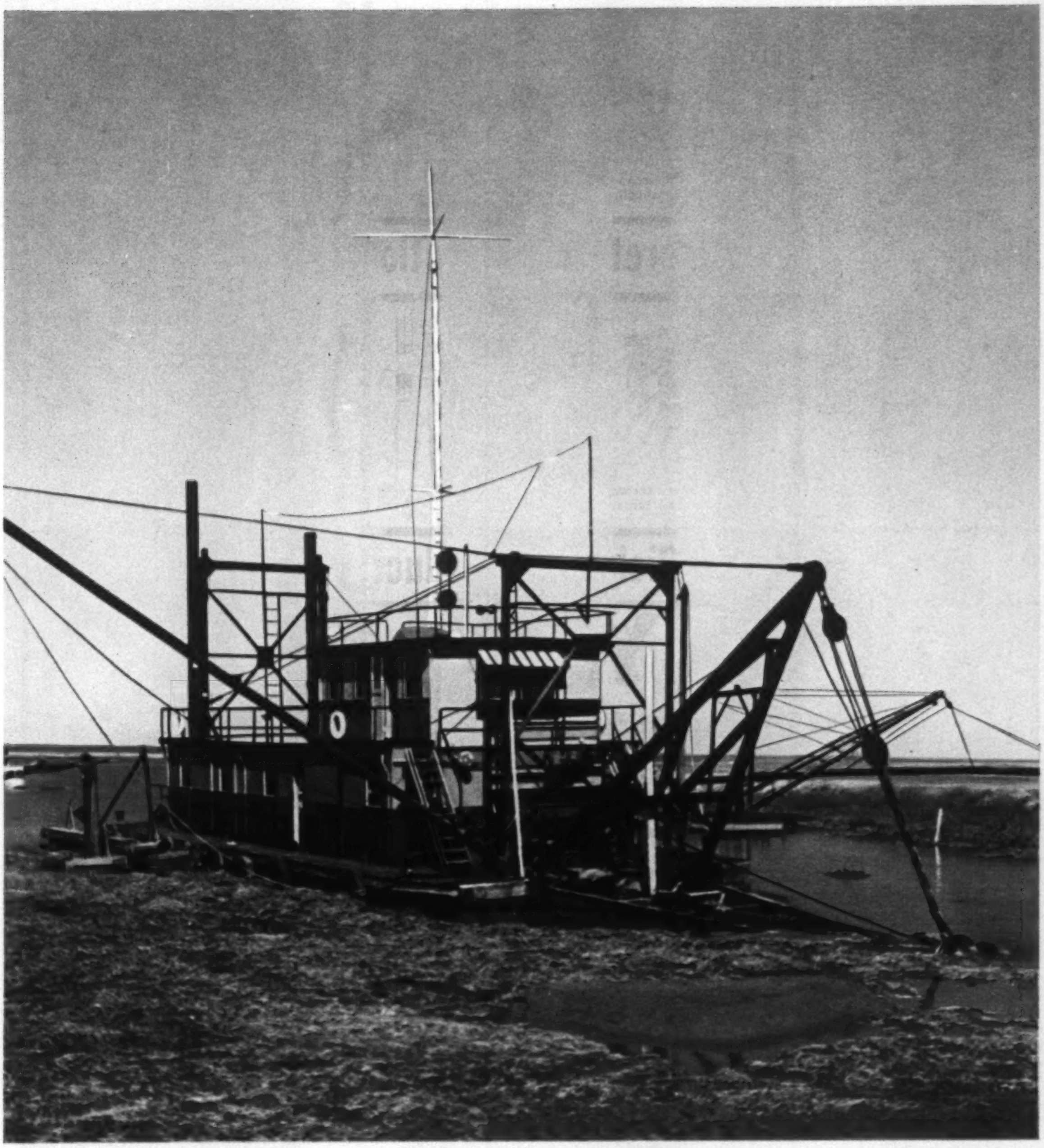
AGUSTIN BARRENA
Madrid, Spain

SIR—We are surprised at your erroneous version of the Vega de Tera investigation.

No Spanish court has yet dictated a sentence over this matter, and no engineer has been declared to blame. We are sure you will not wish to leave the professional standing of these engineers in doubt.

ANTONIO MARTINEZ CATTANEO
President of the Board
Moncabril Power Co.
Madrid, Spain

(Reader Comment continued p. 35)



way out where wire rope had better be good

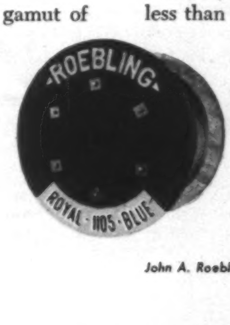
There's nothing like isolation to point up the job value of a wire rope. It's situations like this that put meat on the clichéd bones of "tried and true."

This instance—multiplied by hundreds in the gamut of industries—has contributed to the fine and *lasting* reputation of Roebling Royal Blue Wire Rope. A reputation of unparalleled toughness and strength among wire ropes.

Here, and wherever wire rope is put to work, impact, abrasion, shock and crushing are the "diseases" that kill weak ropes. Royal Blue thrives.

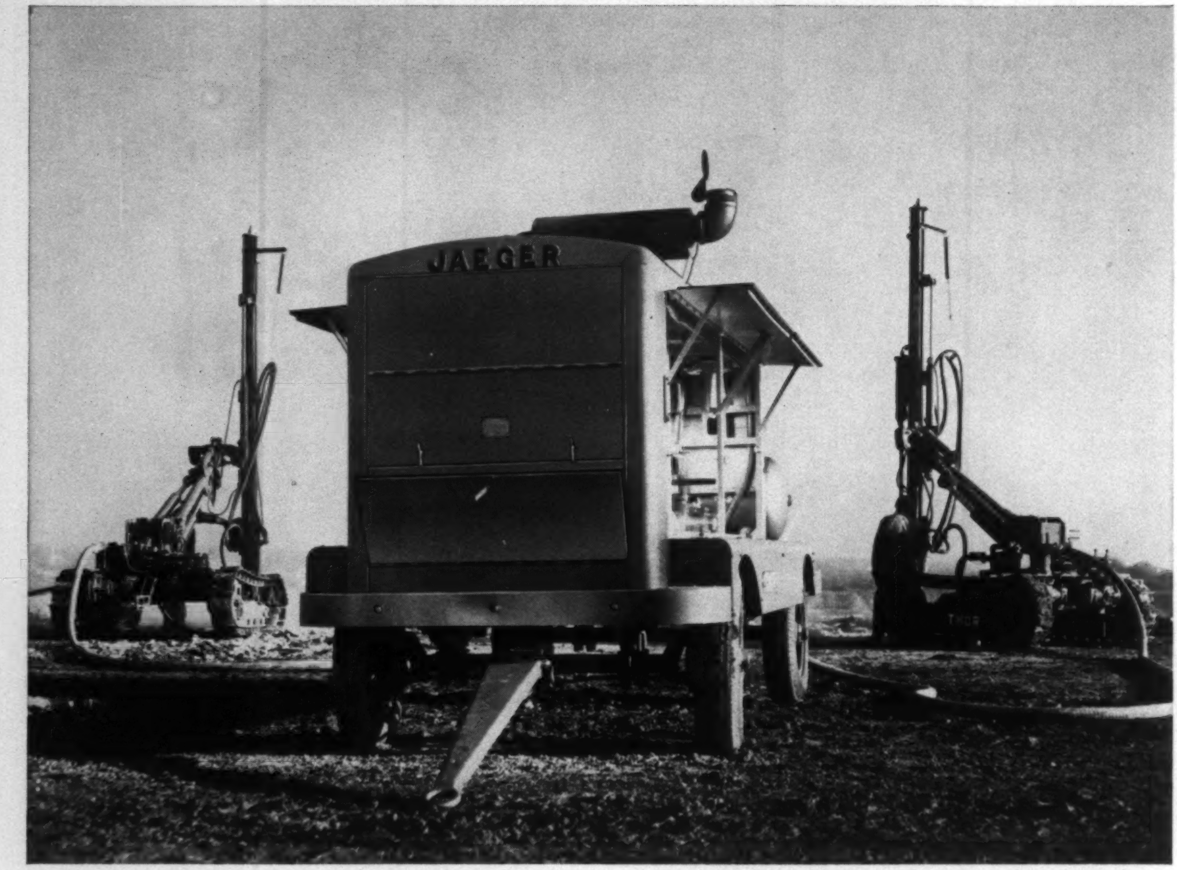
Even if your wire rope distributor were around the corner, you wouldn't be any further ahead with anything less than Royal Blue. You'd be spending more money than you *need* to.

We want very much to show you how *this* rope can save and save and save. Time. Money. Frustration. For this, write John A. Roebling's Sons, Wire Rope Division, Trenton 2, New Jersey.



ROEBLING CF&I

Branch Offices in Principal Cities
John A. Roebling's Sons Division, The Colorado Fuel and Iron Corporation



THE JOB was drilling 3″ holes to 25′ depth, in limestone so hard the insert carbide bits had to be reground after every 48′ to 50′ of drilling.

THE TEAM is a Jaeger "900" rotary compressor behind two Thor TR-5 air-and-hydraulic crawlers with 4½″ drifters.

FOOTAGE AVERAGED 2′ per minute (1′ per drill), the rate varying with the ledge strata.

A NOTABLE ECONOMY was in the fuel-saving, engine-saving speed of the compressor. *It maintained 100 psig at the drills without ever running faster than 1400 rpm.*

World's slowest running "900" compressor powers today's fast drilling team

JAEGER DELIVERS MORE AIR FROM SAME HORSEPOWER

Jaeger "900" uses the same GM 6-110 Diesel as other "900" compressors, but delivers its rated capacity at 100 rpm slower speed — 1700 instead of 1800. Its fuel factor is more than 500 cu. ft. of delivered air per pound of fuel consumed. The engine lives longer because it takes it easier throughout its operating life. Compressor life is longer, too. 8000 hours without a vane replacement is not unusual. Ask any Jaeger owner; ask your Jaeger distributor — or send for new Catalog JC-O.

Air-and-hydraulic drill adapts to any desired position. Drill and compressor make a self-powered mobile "team".

THE JAEGER MACHINE CO., 200 Dublin Ave., Columbus 16, Ohio
Jaeger Machine Co. of Canada, Ltd., St. Thomas, Ontario
PUMPS • MIXERS • TRUCK MIXERS • PAVING MACHINES

CIRCLE 34 ON READER SERVICE CARD

SIR—You state that the world famous Spanish engineer Eduardo Torroja was technical consultant to the defendants. Any reader will put together that statement and the headline, "Court Convicts Dam Designers," and logically conclude that Professor Torroja was guilty although not necessarily convicted. Well knowing the integrity and the high level of engineering accomplishment of Professor Torroja, I believe the least you could do is to clarify his position in the case.

MARIO G. SALVADORI
Professor of Civil Engineering
Columbia University
New York, N. Y.

Editor's Note: This additional information indicates that "indictment" rather than "conviction" was the correct description to apply to the action of the Spanish court. ENR's Madrid correspondent explains that his source, a high Spanish official, says the Zamora court's decision to make charges against the power company and certain individuals was tantamount to conviction. It appears, however, that there has been no such formal conclusion to the case, and that the court has merely registered charges against individuals in the power company.

To amplify on Eduardo Torroja's role: He had no part in the design and construction of the dam but was appointed technical adviser to the court at Moncabril's suggestion after the presiding judge asked the power company for a nomination. Other technical consultants were named by the state.

Capital Letters, Please

SIR—In your article "Research Pays Dividends in Empire State Housing" (ENR April 21, p. 70) you say, "Cement enamel can also replace ceramic tile."

We wish to point out to you that Cement Enamel is our trade name registered on the Principal Register of the U.S. Patent Office and in many states around the country for our special brand of vitreous wall surfacing. As Cement Enamel is the oldest and largest wall surfacing material in the field, we must make clear to the entire construction industry that there is only one Cement Enamel vitreous wall surfacing.

ALBERT SWERDLOW
Sales Director
Cement Enamel Development, Inc.
Detroit, Mich.

Decisions, Decisions

SIR—Note the pusher-scraper pictures at top of pp. 32 and 33 in ENR, Apr. 28. Either the captions or pictures—you decide—are reversed.

MYLES J. SALLACK
Johnsonburg, Pa.

Editor's Note—Decision: The captions.

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PREFERRED BY FLEET OWNERS

634 FLEETS
Among HEAVY CONSTRUCTION CONTRACTORS operating 2 or more "PAYLOADER" units totaling . . .
1842 MACHINES

238 FLEETS
Among PUBLIC BODIES that operate 3 or more "PAYLOADER" units totaling . . . .
2337 MACHINES

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THE FRANK G. HOUGH CO.
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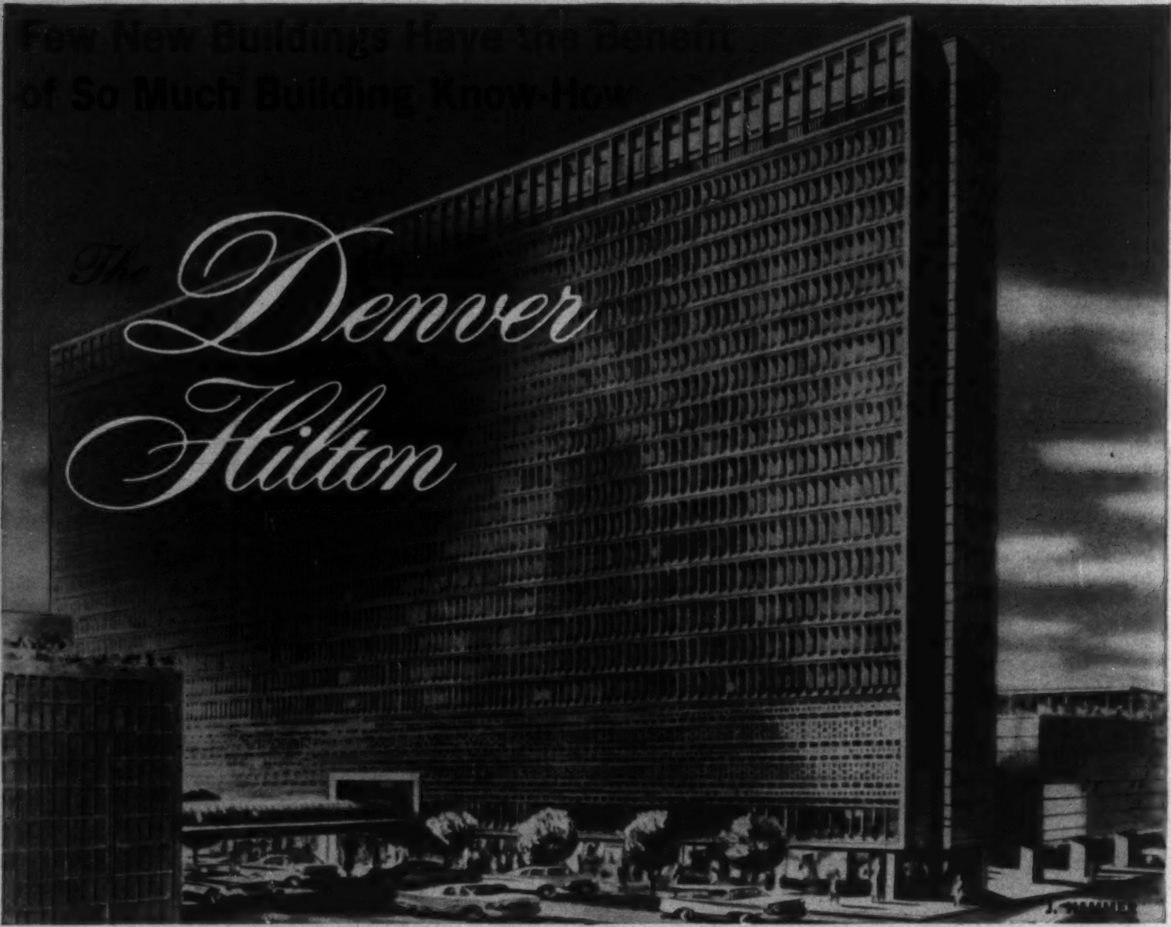
CIRCLE 35 ON READER SERVICE CARD

Few New Buildings Have the Benefit of So Much Building Know-How



Architects: I. M. PEI AND ASSOCIATES, New York, in association with ROGERS AND BUTLER, New York
General Contractor: WEBB & KNAPP CONSTRUCTION CORP., New York • *Consulting Engineer:* JAROS, BAUM & BOLLES, New York
Air Conditioning, Heating, Plumbing Contractor: KERBY SAUNDERS, INC., New York

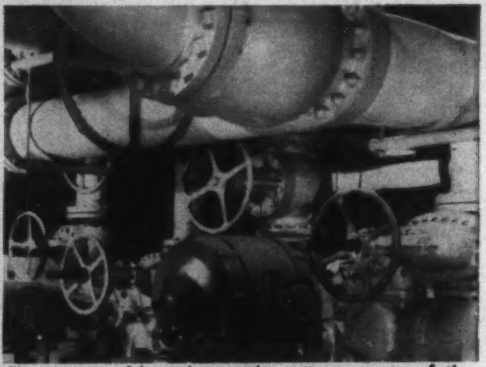
JENKINS VALVES were installed to control all service lines

The name of Webb and Knapp, Inc., owner of the new Denver Hilton, would appear in any list of people who know most about building . . . especially about building for efficient, economical operation.

Outstanding in the world of building, too, are the architects, engineers and contractors who collaborated in the design and construction of the magnificent 884-room Denver Hilton.

Few buildings have had so much knowledge and experience applied to assure trouble-free operation. And, one of the important steps taken to avoid maintenance expense and interruptions of service was the installation of *Jenkins Valves.* Heating, plumbing and air conditioning lines are controlled by valves bearing the famous Jenkins Diamond mark of reliability.

When you specify or install valves, remember that the valves preferred by so many of the country's top building experts for almost a century cost no more. In the end, they can cost less. Jenkins Bros., 100 Park Avenue, New York.



Shown on refrigeration equipment are some of the hundreds of Jenkins Valves of bronze, iron and stainless steel in The Denver Hilton.

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS
SINCE 1864
Jenkins Bros

Sold Through Leading Distributors Everywhere

ENGINEERING NEWS-RECORD
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THE CONSTRUCTION WEEK

ANTI-AIRCRAFT BARRAGE—House Majority Leader John W. McCormack (D., Mass.) reprimanded the Air Force for relying too heavily on aircraft manufacturers and giving too little work to the construction industry in building bases for intercontinental ballistic missiles. In a terse letter to Air Force Secretary Dudley C. Sharp he warned: "The Air Force is making a serious oversight and mistake in neglecting to use construction contractors and their skilled workers to the fullest extent possible." He said he would "watch the developments with keen interest."

TWO FOR TWO—Two missile base contracts totaling $46.5 million were awarded last week to joint ventures comprised of the same four companies. Jobs are at Roswell, N. M., $22.1 million, and Plattsburgh, N. Y., $24.4 million. Companies are Raymond International, Inc., New York City; Henry J. Kaiser Co., Oakland, Calif.; Macco Corp., Paramount, Calif.; and Puget Sound Bridge and Dry Dock Corp., Seattle.

HOW TO IMPROVE GUESSTIMATES—You can get a highly accurate estimate of construction costs from preliminary sketches by applying a unit cost to total surface area. So says S. Arthur Miller of Canadian Industries, Ltd. For additional refinement, he told the American Association of Cost Engineers, apply correction factors for type of contract (lump-sum or cost-plus), quality and complexity, cost indexes and economic conditions.

GOLDEN GATE CAN DO—Subject only to confirmation by aerodynamic model tests now under way, addition of rapid transit facilities under the present roadway of the Golden Gate Bridge is both "feasible and practicable," according to consulting engineer D. B. Steinman. Estimated cost is $8.7 million, exclusive of tracks, signals and electrical system.

ENGINEERING CORNERSTONE—Former President Herbert Hoover last week offered the engineering profession this cornerstone for faith in the future: Keep freedom alive in the world, and engineering will flourish in the interest of mankind. The occasion was the setting of the cornerstone of the United Engineering Center in New York. Work on the steel frame has advanced beyond the half-way mark.

GOLD FROM IRON ORE—Contract for a $60-million iron ore mining and processing project in southwestern Wyoming may be awarded in the next couple of weeks. Owner is Columbia-Geneva Steel Division of United States Steel Corp. Work includes processing plants, two dams, relocation of a three- to four-mile section of highway and a 76-mile railroad spur. Other jobs coming include a 36-mile gas pipeline and a $9-million electric transmission line.

HOW TO HANDLE WET JOBS

#56 of a series

Project: McMillan Street Pumping Station, Jacksonville, Fla.
General Contractor: The Auchter Company
Engineers: Metcalf & Eddy, Boston, Mass.

Slopes withstand torrential rains as wellpoints...

Control 32′ of Water in Sand and Porous Limestone

Many contractors know from hazardous experience that porous limestone at subgrade is a "tough nut" soil to dewater. Compounding that problem, the property limits of this site were so close to the excavation area that open cutting would require steep slopes in the overlying sand. It seemed questionable whether the slopes could withstand the heavy Jacksonville rainfall.

- Steel sheeting mandatory? Though many thought so, The Auchter Company was confident that, with proper handling of the ground water and surface run-off, it could open cut the excavation.

- Auchter called for a Griffin wellpoint system to control 32 ft of water in this tricky soil. Plastic sheets were placed at pump stations to prevent undermining by the torrential rains. Photo shows subgrade dry and slopes stable... another successful dewatering job by Griffin.

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25th YEAR

CIRCLE 38 ON READER SERVICE CARD

WASHINGTON OBSERVER

- **School aid: Where there's life, there's hope**
- **Road probe: More coming after Election Day**
- **Federal buildings: $800 million worth on way**

- **Supporters of federal aid to school construction are cautiously optimistic** about the chances of getting a bill in a form the President will sign. A big factor is the active support of Vice President Nixon.

  First success must be won in the House Rules Committee. Once the Rules Committee permits the House to appoint conferees to meet with the Senate, the legislation will be perfected for the White House. The aim: drop the provision for teachers salaries in the Senate version; require states to match federal grants from the outset; drop anti-segregation amendment.

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- **You can expect more headlines about irregularities in the road program, but not until the Presidential election is out of the way.** Rep. John A. Blatnik (D., Minn.), chairman of the House Public Works subcommittee, said this week he'll postpone further hearings until after the election to make sure political considerations are kept out of the probe.

  Committee investigators are now working on what Congressmen Blatnik describes as five serious cases of irregularities in the Interstate program.

—

- **Some $800 million worth of new federal buildings in 41 states have been approved by the congressional public works committees.** That means that these 75 projects are eligible for appropriations and construction over the next several years.

  Biggest projects: courthouse and two federal office buildings in Chicago, $105.6 million; customs court and federal building in New York, $78.9 million; courthouse and federal building in San Francisco, $49.7 million; federal building in Cleveland, $47.9 million.

  The new approvals come under the Public Buildings Act of 1959, which ended the Eisenhower Administration's attempt at private lease-purchase of new federal buildings, and restored federal financing and construction.

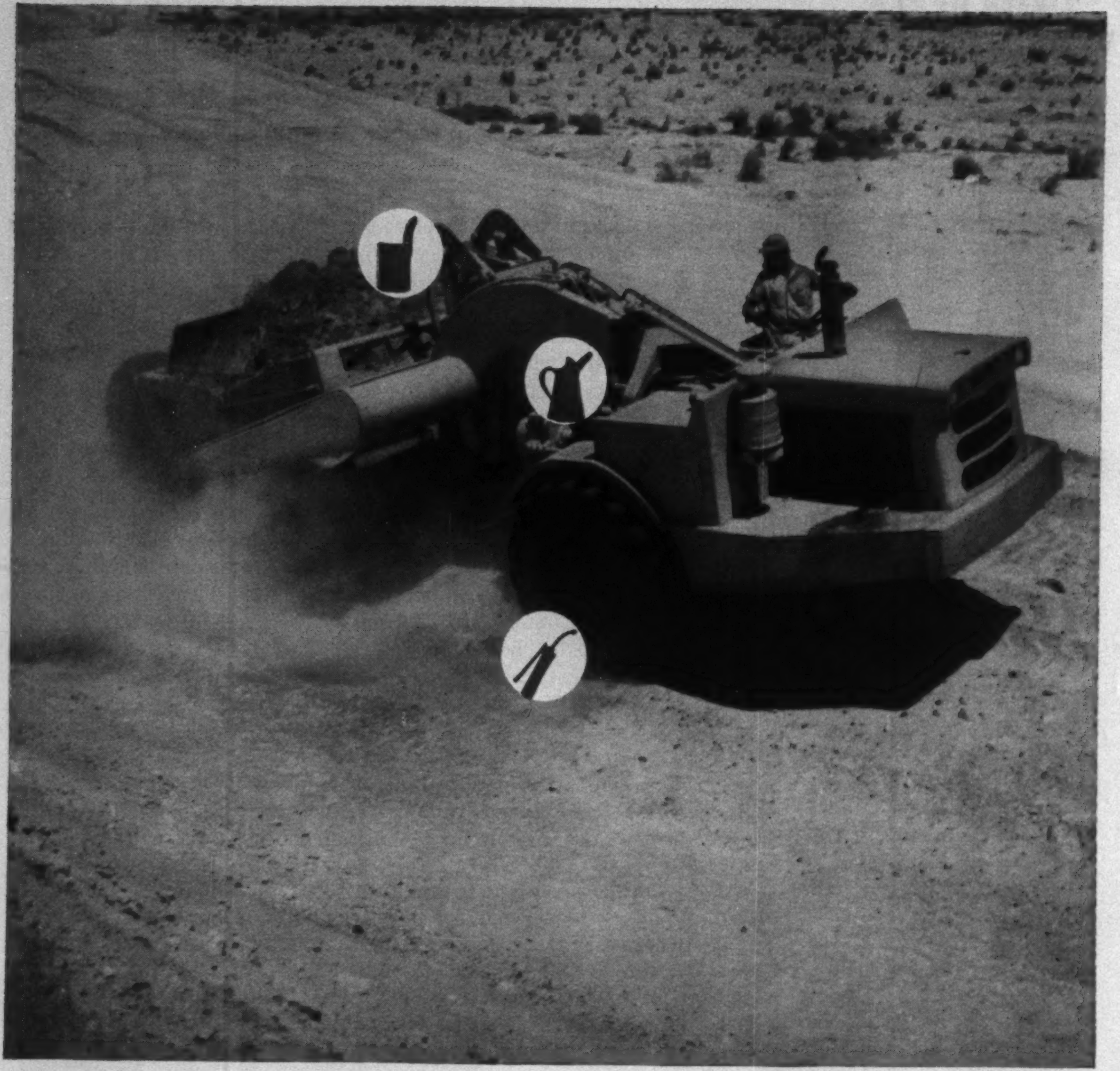
—

- **The long-awaited findings of the Kerr water resources committee will be delayed until next year.** The staff is now drafting recommendations that will become the basis for long-range legislation. A special report, prepared for the committee by Edward A. Ackerman of Resources for the Future, Inc., foresees integration of all types of water conservation.

  Mr. Ackerman sees the greatest need for water conservation—including restrictions on land use—in the Southwest. Conservation may become necessary to a degree in the industrial Northeast, the report says.

—

- **Construction work on the Pentagon's $5-million giant radio-telescope project in Puerto Rico (ENR Oct. 8, 1959, p. 29) will be delayed.** Corps of Engineer surveyors have run into subsoil difficulties in the natural depression that is to be telescope's site. Additional core borings are being taken to see what can be done about the site's soft bottom. The unexpected snag will delay solicitation of construction bids and boost the project's estimated cost.



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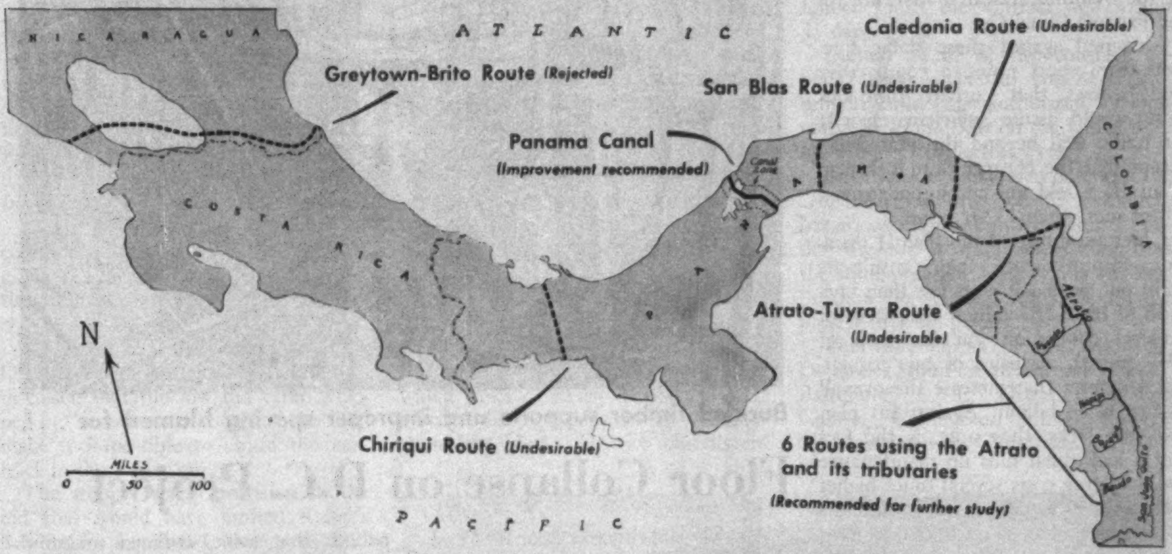

NICARAGUA
ATLANTIC
Greytown-Brito Route (Rejected)
San Blas Route (Undesirable)
Caledonia Route (Undesirable)
Panama Canal (Improvement recommended)
Canal Zone
PANAMA
COSTA RICA
COLOMBIA
Atrato-Tuyra Route (Undesirable)
Atrato
N
MILES
0
50
100
Chiriqui Route (Undesirable)
6 Routes using the Atrato and its tributaries (Recommended for further study)
PACIFIC

Consultants' recommendations (above) and Canal Co. report to come promise . . .

Clash Over Panama's Future

A bulky report on the Panama Canal that was handed to Congress last week clashes head-on with a forthcoming report by the Panama Canal Co.

A five-man consulting board submitted its 850-page study to the House Committee on Merchant Marine and Fisheries to back up its recommendations for the canal and its opinions on a proposed sea-level crossing of the isthmus.

The board, formed in 1957 and headed by S. C. Hollister, former dean of engineering at Cornell, made these recommendations:

- **Interim improvements costing $61 million should be pushed forward as speedily as possible,** and effective two-lane operation of the present canal should be provided by augmenting the lock machinery and by improving lock overhaul and ship transit scheduling.
- **No sea-level canal project in the Canal Zone should be undertaken in the near future.** Third-lock plans already in existence for long-range improvement of the canal will take care of projected traffic well beyond the year 2000. The board says conversion of the present canal to sea-level operation could not be justified by expected traffic until the next century.
- **Drop any further consideration of Nicaragua for a sea-level route.** Data available in earlier studies show that Nicaraguan possibilities are "impractical" and "prohibitively expensive" in comparison with other sea-level routes.
- **Initiate at once additional intensive studies of six sea-level routes in Colombia.** All originate in the Atrato River at the Atlantic end, but follow different tributaries from the Atrato through the divide to the Pacific.

These conclusions are reportedly in sharp conflict with the findings presented to the White House by the Panama Canal Co. Maj. Gen. Charles E. Potter headed the Canal Co. study and wrote the recommendations before completing his four-year tour as company president and Canal Zone governor. For several months General Potter has been saying unofficially that he favors early construction of a sea-level canal to head off a traffic jam which, company officials fear, would cause a bottleneck to world trade by 1975.

Nuclear explosives are suggested as the only means of opening the sea-level crossing in time to prevent blockage of trans-isthmian shipping. Some of President Eisenhower's advisers welcome such a suggestion. They have been looking for a major demonstration under Project Plowshare to test the feasibility of nuclear blasting.

The congressional consultants agree to the attractive possibilities of nuclear explosives. But they point out that too little is known of the method at present to permit adequate planning or estimating of costs for a canal excavated by such means. Their report, therefore, sticks to cost estimates worked up by Canal Co. engineers and consultants on the basis of known construction techniques.

In their recommendations, however, the congressional consultants urge that a government agency be given authority to push vigorously the experimental development of excavation by nuclear explosives. Experimenting with nuclear underground blast is suspended by the current Presidential ban on testing.

Findings of the five-man board will carry weight with Congress. In addition to chairman Hollister, the board members were Francis S. Friel of Philadelphia, immediate past president of ASCE; retired Lt. Gen. Leslie R. Groves, Corps of Engineers, who headed the Manhattan Project, which developed the atom bomb, and who is now with Remington Rand as vice president; Hartley Rowe, board chairman of Jackson Moreland International, Inc., Boston consulting firm, who served the old Panama Canal Commission through construction and during the first five years of operation of the canal; and John E. Slater, senior partner of Coverdale & Colpitts, New York consulting engineers, former president of American Export Lines and board chairman of the New York Shipbuilding Corp.

(*Turn the page*)

It would be many years before any large-scale physical improvement of the Panama Canal could be economically justified, the board indicates. The consultants base this judgment on canal traffic projections recently worked up by the Stanford Research Institute for the Panama Canal Co.

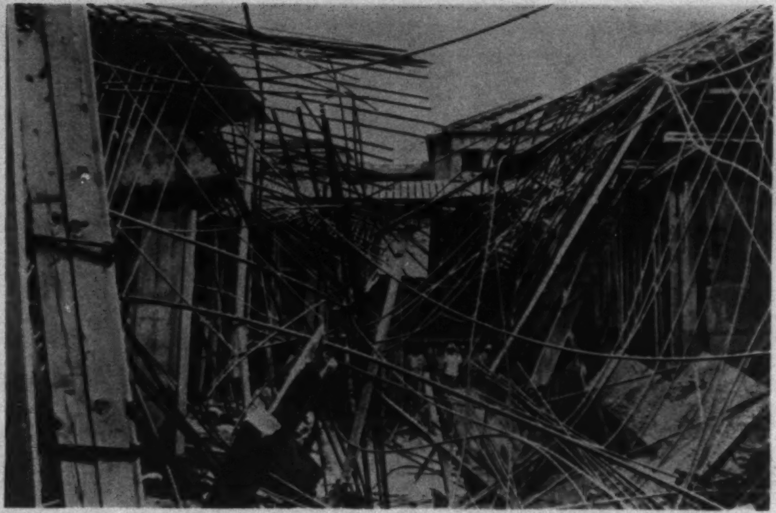
Measured against these traffic forecasts, the report notes, a comparative study shows that current third-lock plans would assure sufficient capacity for traffic well beyond the year 2000, except that the cheaper third-lock plan (Plan II) would not accommodate vessels of more than 132-ft beam.

Chief advantage of the Plan II third-lock improvement, the consultants point out, is that it costs less than one-third of the $2.37 billion estimated for sea-level conversion (on the basis of 1959 prices), exclusive of tide regulating structures that increase the over-all cost to $2.54 billion. Against any plan involving locks, they note, is the fact that a lock canal runs up maintenance and operating costs several times higher than a sea-level route. Also these costs rise with inflation, as contrasted to fixed capital costs.

Tolls should pay in full for all canal costs, the consultants say. Plunging too soon into a third-lock project or a sea-level canal would call for a subsidy which they consider unwarranted. Only national security could justify the high fixed charges for making such improvements. Their report assumes no security value because there is no evidence that a credit for this purpose is justified. In the judgment of the board, a rate of 3½% for fixed charges should be applied to future construction. The consultants estimate that it will cost that much to borrow the money.

Much can be done to increase capacity of the existing canal, the consulting board reports. The first step would be complete management acceptance of the two-lane operating concept. First objective, the consultants say, is to cut to an absolute minimum the number of days of single-lane operation, starting with suggestions already made by Canal Co. personnel. To aid the more efficient two-lane operation, the board declares that the government would be justified in making substantial investments to speed replacement of miter gates and other lock repairs reducing time losses resulting from interference with traffic.

With so-called Plan I improvements, estimated to cost $61 million, in effect, the existing canal—even in brief intervals of one-lane operation—could easily take care of peak 1959 lockages, the report declares. Looking ahead, the findings indicate that the $733-million Plan II for the third set of locks could meet projected peak requirements for the year 2000.



Buckled timber supports and improper spacing blamed for . . .

Floor Collapse on D.C. Project

A newly laid concrete floor for Washington's new Smithsonian Institute Museum building collapsed last week, injuring 12 workmen.

A preliminary report blames the collapse on failure of the supporting timbers and on improper spacing of shores that carried the formwork.

Two inspectors at the scene found faulty first floor form bracing, according to a report by Fred C. Thomas, district government industrial safety director.

Contractor on the job is Norair Engineering Co.

Norair spokesmen have two unofficial theories on why the supports buckled: the first blames a faulty wedge, or a wedge knocked out of place; the second reasons that some workmen unknowingly may have pushed the timber out of place.

When the collapse occurred, masons were finishing concrete on the first floor of the $24-million building. An area approximately 40x60 ft and weighing about 180 tons gave way and fell nearly 25 ft into the basement.

After the first timber had been dislodged from its setting, the weight of the new concrete buckled it. Under the force, nearby timbers also gave way causing "a chain reaction," says a Norair official.

According to Norair, the work has not been pushed back at all by the accident.

Florida Explains Road Failures

The Florida State Road Department has assumed "complete blame" for failure of a 10-mile stretch of four-lane highway between Jacksonville and Jacksonville Beach. The road is about 10 years old.

The road has an oyster shell base. Oyster shells are widely used for base construction along the Gulf and Atlantic coasts, most often for less heavily traveled routes.

William Killian, chairman of the State Road Board, blames lack of compaction for the failure. He said that project records show the shell base was about 10½ in. thick when completed, about ½ in. more than required. Now, however, the thickness is about 9½ in. "We conclude that the present deficiency in the thickness of the shell base is due to the fact that in 1949 our specifications did not require sufficient compactive effort," he says. Since then, compaction requirements have been increased.

W. T. Ellis, a district soils engineer, found that the shell was poorly bonded in the bottom half of the base. One reason for the breakdown, Mr. Ellis said, is that very little sand was mixed with the shell when the original base was put down.

Duval Engineering and Contracting Co. of Jacksonville built the highway under a low bid of $1,059,257. Project specifications permitted use of a shell, limerock or sand bituminous base. Duval's bid was the only one offering the shell alternate. The road is being rebuilt by the same firm under a $767,441 contract awarded last December. This time, the base is limerock, which is a soft limestone used as a standard base course for major Florida roads.

Ifs, ands & buts lose a contract as . . .

Kaiser Bows Out of Feather River Job

A five-company combine last week voluntarily withdrew its $51.2-million low bid on the Oroville-Wyandotte hydroelectric-irrigation project after the sponsors found strings attached. The big project on the South Fork of the Feather River in California includes six dams, three powerhouses, 17 miles of tunnel and 23 miles of canal.

Henry J. Kaiser Co., leader of the combine, appeared to have the job cinched with a bid $1.4 million under the only other bidder, another five-firm combine (ENR June 16, p. 26).

But early last week officials of the Oroville-Wyandotte Irrigation District disclosed that the low bid came wrapped in "serious reservations" that would make it impossible to award the contract to the Kaiser group.

The stopper was a provision in the bid that would have limited Kaiser's liability for liquidated damage to $1.4 million. Kaiser attorneys give this reason for the reservation: The Oroville-Wyandotte contract will not have the usual type of "force measure" clause, which normally extends construction deadlines automatically for delays caused by unusual weather, strikes, earthquakes, etc.; the only allowance on this extensive job will be for war and nuclear risk.

Apparently Kaiser put a lot of weight on a little word—"may." OWID's instructions to bidders included this sentence: "The insertion of any other proviso or condition may be cause for rejection of the bid."

It was probably that same word "may" that set off a debate among OWID attorneys that lasted four or five days before they finally decided the Kaiser bid was unacceptable. They tried hard to find a way to accept the bid, says OWID president David D. Updegraff.

And it may have been the fast footwork by the other bidder that tipped the scales against Kaiser. That combine —headed by Guy F. Atkinson Co., San Francisco, and Ostrander Construction Co., Portland, Ore.—shot off a fast letter to OWID as soon as it learned the nature of the legal discussions within OWID. The letter expressed the Atkinson-Ostrander belief that, legally, it had the low bid.

Mr. Updegraff said the letter carried weight because OWID feared the entire project might get tied up in prolonged litigation.

Also weighing heavily in the decision was the fact that the differences with Kaiser could not be negotiated. The state water code prohibits negotiation on construction work, although negotiation on bond issues is permitted.

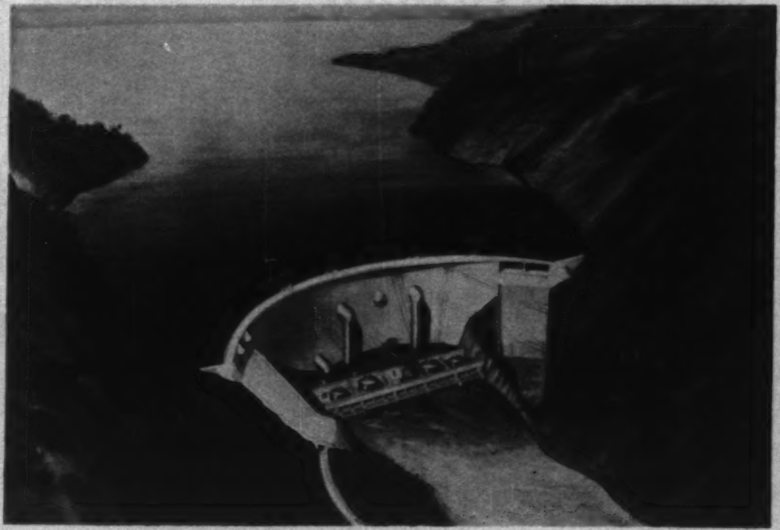
OWID could have republished a call for bids and had a second opening. But that would have been time-consuming; the construction season could have been lost.

Kaiser's bid also included another, but less crucial, reservation: If contracts were not awarded within 45 days of the date of the bid, Kaiser would be entitled to an extension of time of all stipulated completion dates equal to the number of days in excess of the 45-day period. Although such a reservation is against the letter of the law, which gives a 90-day period, OWID officials did not consider it a serious stumbling block. District officials intended to let the contract well within 45 days.

(Actual award of the contract depends upon successful sale of a $62-million bond issue authorized by local voters in 1958. Bids on the bonds were opened at Oroville this week.)

An Atkinson spokesman describes the Oroville-Wyandotte job as extremely hazardous. The contractor must "underwrite the weather, the terrain and the labor situation." He points out that "seldom do you bid for such a large project in a lump sum."

The other firms in the Atkinson-Ostrander group are the Arundel Corp., Baltimore; L. E. Dixon Co., San Gabriel, Calif.; and Hunkin-Conkey Construction Co., Cleveland.



Smith Mountain Dam, boasting pumped storage, is one of . . .

Three Dams for the Roanoke

Big things are happening on the Roanoke River these days. Work has begun on the upper dam for the Smith Mountain hydro project and on August 1 construction is scheduled to start on $50-million Gaston Dam.

Virginia Electric and Power Co. is building the 3,600-ft-long Gaston earth and rock fill structure. Smith Mountain, a 227-ft-high concrete arch, is the key feature of a two-dam, pumped storage scheme being built for Appalachian Power Co., a subsidiary of American Electric Power.

The artist's rendering above shows the pumped storage structure at Smith Mountain Gap. An 85-ft-concrete gravity dam to be built 17 miles downstream from this dam will provide 35,000 acre-ft of active storage that can be pumped into the upper reservoir for use during periods of high power demand.

The two stovepipe-like structures behind the arch are power penstocks. A port is available between them for future expansion. The two outside units are the reversible pump-turbines. Combined capacity of the two dams will be 580,000 kw.

The Gaston facility will have four 50,000 kw generators and 11 radial flood gates on its concrete spillway. Completion is scheduled for 1963.

Foreign Aid Program Survives Intact

Congress will give the Administration most of the approximately $4 billion authorized for foreign aid. That became clear last week when the House of Representatives voted to appropriate $3.58 billion for the foreign aid program in fiscal year 1961.

Nearly $1 billion of that will go for financing construction projects around the world (ENR June 9, p. 19).

The Senate almost certainly will appropriate close to the amount authorized for the program, so that when the two houses split the difference in conference, the final total should be between $3.7 billion and $3.8 billion. That would be higher than in any of the last five years except 1957, when $3.8 billion was appropriated.

Earlier, the House Appropriations Committee had slashed the President's request for foreign aid by nearly $800 million and the authorization figure by more than $600 million.

The committee also had forbidden the Administration to participate in financing the $1-billion, 10-year program to harness the waters of the Indus River system for the benefit of 40 million Indians and Pakistanis. The Indus development program is the biggest international engineering and construction job ahead on the horizon.

The committee, in addition, had written into the bill restrictions that would have made it difficult or impossible for the U. S. to help the emerging nations of Africa during the coming fiscal year. This could have seriously compromised future prospects for U. S. participation on construction in Africa.

An unusual coalition of conservative Republicans and liberal Democrats joined forces in the showdown vote in the House to restore $200 million of the $400 million the committee had cut from the military aid authorization. Curbs on U. S. participation in the Indus program and in technical assistance and development projects in Africa also were removed.

Unprecedented conservative Republican support in the House for the foreign aid program reflected primarily GOP embarrassment over the recent diplomatic defeats suffered by the Administration. The Administration is under fire from the Democrats for its part in the failure of the summit conference and for having laid itself open to the loss of prestige that is bound to result from cancellation of the President's visit to Tokyo.

House Republicans didn't want to be accused of undercutting the President's foreign policy at a time when it is under attack at home and abroad. The northern Democrats who helped rescue the foreign aid program traditionally have been its strongest supporters.

Administration officials are particularly relieved about the green light on the Indus development program. This is the main hope for ending the long feud between India and Parkistan. The feud has seriously weakened a vital sector of the free world front against Communist expansion. The World Bank has been working patiently on the scheme for eight years. It has won virtual agreement from eight nations, including the U. S., to cooperate in the giant project.

Around the World . . .

- **Going up down under**—A 23-story office building featuring an exterior glass-walled elevator shaft will be built in Auckland, New Zealand. Two U. S. firms—engineers John A. Blume and Associates and architects Skidmore, Owings and Merrill, both of San Francisco—will design the $4.2-million project in association with Messrs. Rigby Mullan, Auckland architects.

- **Lima sprouts**—Foundation work is underway in Lima, Peru, for a 28-story office building with 10-story wings on either side. The structure is being built for the Banco Wiese, Limitado, and is estimated to cost $3.6 million. Immobiliaria Ucayali-Pasco S.S., a Lima real estate firm, also plans to build a 10-story building in Lima that may cost $2.5 million.

- **Another Nile dam**—The Egyptian Ministry of Public Works is now studying construction of a dam on the Nile for the generation of hydroelectric power. The projected dam will span the Nile near the town of Girga in central Egypt. Its power would encourage new industry in Sohag Province.

- **Berlin underground**—A $1.2-million vehicular tunnel under Breitschad Platz in downtown West Berlin has been opened after two years of construction. The 770-ft tunnel was designed to ease the flow of traffic around the Kaiser Wilhelm Church. The church was almost completely destroyed by Allied bombers during World War II and is left in that condition as a monument.

- **"Water pipe under water"**—A water intake pipe, 20-in. in diameter and 5,000 ft long, will cross the Canso Strait from the Mainland of Nova Scotia to Cape Breton Island. The pipe will be laid at a depth of 200 ft. It will service a planned $40-million pulp mill at Point Tupper. American Cast Iron Pipe Co., Ltd., Birmingham, Ala., has the contract for the job to be completed by October of this year. Charles T. Main, Inc., Boston, prepared pipeline plans.

- **Bridge clearance reduced**—The Army's Corps of Engineers has reduced from 80 ft to 65 ft the vertical clearance required for bridges over the Atlantic Intracoastal Waterway, which runs from Norfolk, Va., to Port Everglades, Fla.

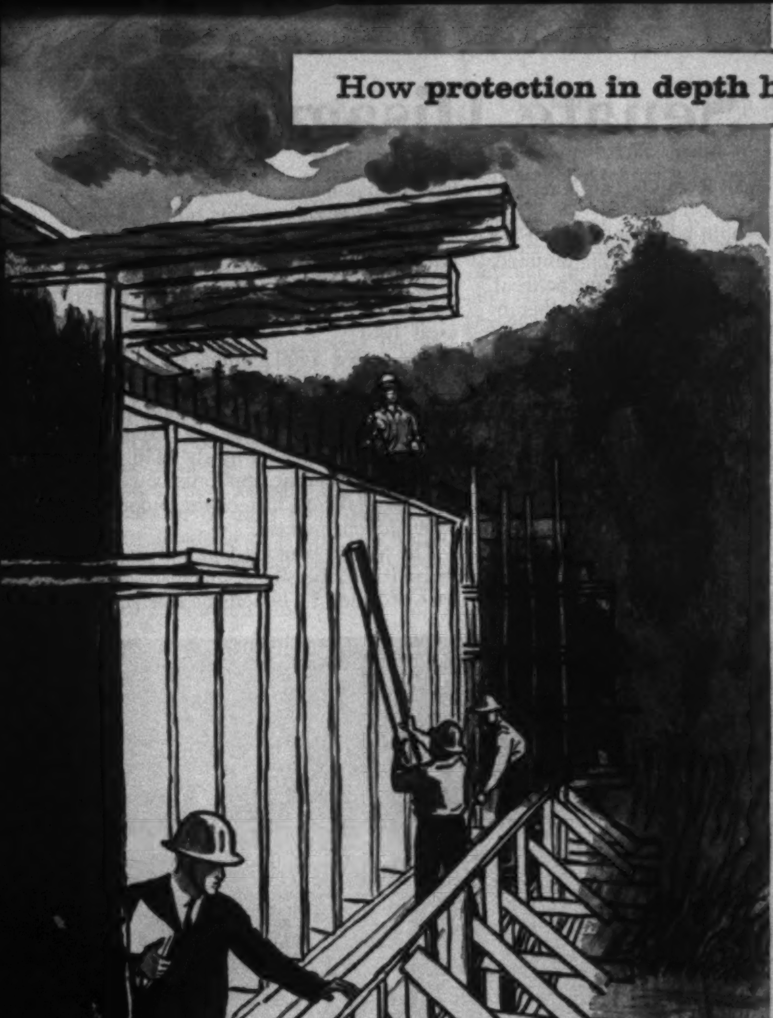
- **Tahiti enters the jet age**—The French government has contracted for a 11,000-ft runway on a lagoon at Papeete, on Tahiti, that is expected to make the island a major stopping point for jet airliners in the South Pacific.

- **Buffalo breakwater**—A $2.5-million breakwater that will show up as a sliver of stone in Lake Erie, about two miles off Buffalo, is part of the city's $6-million harbor entrance. Eight feet wide at the top, the lake-bottom width of the structure is 130 ft. Height is 42 ft. Completion of the 1,800-ft-long breakwater is set for 1962.

- **Tyne tunnel**—Work will begin this autumn on a $35-million vehicular tunnel under England's River Tyne between the counties of Durham and Northumberland. It will take about six years to complete the job.

- **Swamp drainage project**—The government of El Salvador plans to spend $2 million to drain a swampy area, known as Laguna de Zapotitán, covering 283 acres in the province of La Libertad. A Dutch firm has the contract.

How protection in depth helps cut compensation costs



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CIRCLE 45 ON READER SERVICE CARD

House and Senate Disagree on

A clash over housing legislation is shaping up between the Senate and House of Representatives.

Late last week the Senate approved and sent to the House an omnibus housing bill vastly different from the one approved by the House Banking Committee.

The House group, sparked by Rep. Albert Rains (D., Ala.) approved a wide ranging bill that would introduce a number of new housing programs. Supporters say the measure just meets minimum demands of liberals.

But the Senate's measure is more conservative this election year. It does include a last-minute addition of 25,000 public housing units, but generally it would provide funds merely to extend existing housing programs without introducing any innovations.

Democrats on the Senate side argue that they made their point last year in establishing the difference between Democrats and Republicans on housing legislation. Senate Democrats this year, more anxious to get a bill past President Eisenhower's veto, have stripped their measure down.

In total dollars, both bills provide close to the same amount: $1.36 billion by the House; anywhere from $1.25 billion to $1.4 billion by the Senate, depending on what estimates you use. However, the Senate measure would spread the money out over a longer period, and includes a section allowing an additional $150 million for veterans housing. (Veterans housing would ordinarily be considered in a separate piece of legislation.)

As it looks now, the modest Senate version is the one most likely to go to the President's desk. The House bill has more hurdles in the way. First, it has to clear the conservative Rules Committee, which gives every indication of sitting on the bill until the Senate measure comes to the House side. Second, the House bill almost certainly would be vetoed by the President.

Here's how the two bills compare:

College housing—both measures provide $500 million—the biggest item in both bills.

- **Urban renewal**—Senate, $350 million; House, $450 million.
- **Houses for the elderly**—Senate provides $25 million in loans to non-profit concerns specializing in homes for the old folks; the House $50 million.
- **Fannie Mae special assistance**—Senate provides $65 million; House, $50 million.
- **Community facilities**—Senate asks $50 million; House, twice that.
- **FHA insurance**—both bills call for an additional $4-billion authorization for mortgage insurance.
- **Terms**—both bills would allow FHA to lower the present ½% insurance premium to one-quarter of one per cent. The House bill goes much further by easing other terms: Down payments on homes up to $13,500 would be eliminated; homes over $20,000 would require a 25% down payment instead of 30% to qualify for FHA insurance; insured mortgages could run for 35 years instead of the present 30-year maximum.

The additional $350-$450 million of grant authority for urban renewal projects would not immediately accelerate the programs of the nation's cities and local communities. With $300 million already becoming available July 1 under existing law, the Urban Renewal Administration has adequate authority to cover foreseeable capital grant applications that will be received during fiscal 1961.

The added $500 million for college housing would have an immediate effect. The Community Facilities Administration is now holding 195 applications from colleges for nearly $250 million. Thus pending applications would promptly take up half of the proposed $500-million increase.

The Senate Banking Committee had shelved an earlier Rains bill that would have provided $1 billion for emergency

Expanding over the years, stadium ran out of room to grow.

Transplanting Cures

Members of Pennsylvania State University's senior class received their degrees this month in a steel stadium that had been moved from a site a mile away.

On its new, larger site, the stadium has 15,000 seats added as back tiers to its original 30,000 seats.

"It was almost like working with an erector set," says the field superintendent, Arch Scapes, of Pittsburgh-Des Moines Steel Co., the steel contractors.

The University estimates it saved $300,000 under the cost of erecting an all-new steel stadium, and about $750,000 under the cost of an all new concrete stadium. The decision was made following studies by Michael Baker, Jr., Inc., consulting engineer of Rochester, Pa.

The whole job cost close to $1.6 million. The steel contract alone, for dismantling and relocation of the old stands, and fabrication and erection of the new stands, was $886,000.

The result is a 45,000-seat stadium, one of the largest all steel-deck grandstands in the country.

Erection of the 15,000 new seats began last July when a 10-man erection crew moved in. Its job was to put up from 30 to 40 rows of seats to form the

Housing

purchase of middle-priced homes by FHA to act as a stimulant to the housing industry.

The Senate did, however, approve a controversial new provision that would require the President to state publicly at the beginning of each year the nation's housing goals and the number of starts needed.

The House measure calls for a number of new programs aimed at providing greater flexibility in federal financing for the housing industry and at raising the number of units built during the present decade to an average of 1.6 million new homes yearly. Housing is now running at an annual rate of 1.2 million to 1.3 million units.

One feature would set up a central mortgage bank within the Federal Home Loan Bank Board to purchase conventional mortgages from member groups. Another bank of the central mortgage type would be set up within Fannie Mae to allow the agency greater latitude in making mortgages and to increase by 50% the amount of the agency's borrowing authority.

Another new program would allow FHA to insure loans to builders and real estate developers who have difficulty securing financing when opening up new development projects.

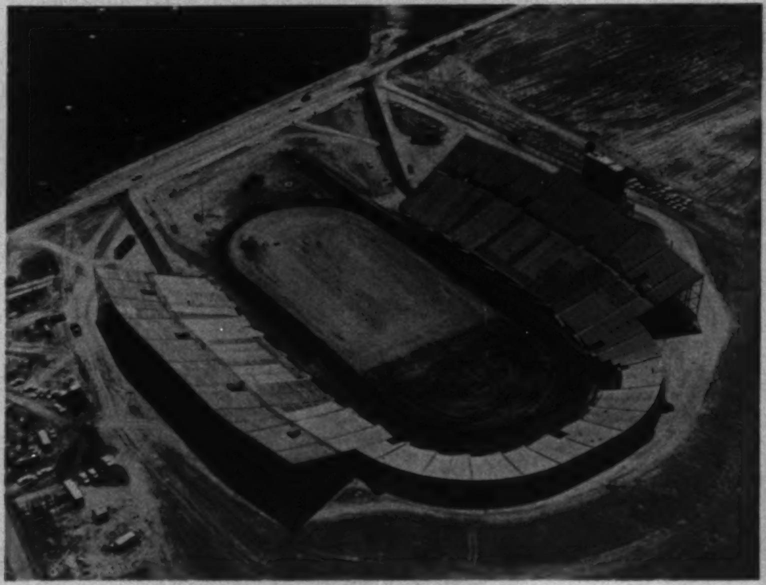
The question now is what legislation will finally emerge from Congress and whether it will be acceptable to the President.

Republicans had considered the modest Senate bill a sure thing to win Mr. Eisenhower's approval. But that was before late maneuvering on the floor added public housing provisions to the measure passed by the Banking Committee. Mr. Eisenhower is strongly opposed to public housing.

The bill approved by the House Banking Committee is a certain veto candidate. It could be, however, that that bill will never reach the House floor. As ENR went to press there was talk of sending the Senate measure directly to the House floor under a parliamentary procedure that would require a two-thirds majority in the House for passage.

Such a stratagem would make it more likely the President would finally receive the less-objectionable (from his point of view) of the two measures; and it would help skirt the possibility of the bill bogging down in a wrangle between the two houses of Congress.

So crews moved it to new site . . .



where new tiers upped capacity to 45,000.

Penn State's Case of Stadium Cramps

back tiers to the transplanted stadium.

Dismantling the old stadium was held up until the football season ended. Then a 10-man crew began the dismantling process.

First the crew painted piece marks on every piece of steel to be dismantled and moved, and marked the spots where the stands were to be cut apart. Seat boards, sway rods and wind bracing were removed. The workmen left just enough bolts to keep the stands in place.

Then the actual dismantling began. The crew removed the steel deck plates in 18x20-ft sections, using a special picking frame and sling (made up of a wide flange beam with six attached cables).

Structural steel members and deck plates were loaded on flat bed trailers and moved to the new site as they were needed by the erection crew. More than 700 major pieces of steel were moved, about 1,100 tons.

The new stadium is U-shaped. Side sections are 70 rows high, with 80 rows in front of the press box (which was relocated, too). The end section has 30 rows.

When the stadium was planned back in the '30s, University officials knew expansion would be necessary. They started with a single 2,400 seat section. Over the years, eight additions raised capacity to the 30,000 seats included when the stadium was moved onto a larger site and to make room for a new academic building.

Even the latest move doesn't mark the end. Future plans call for adding 10 more rows of seats on all three sides of the stadium.

But enterprising graduates of the class of 1935 who returned for commencement this month were still able to sit in the original steel stands, if they looked hard enough.

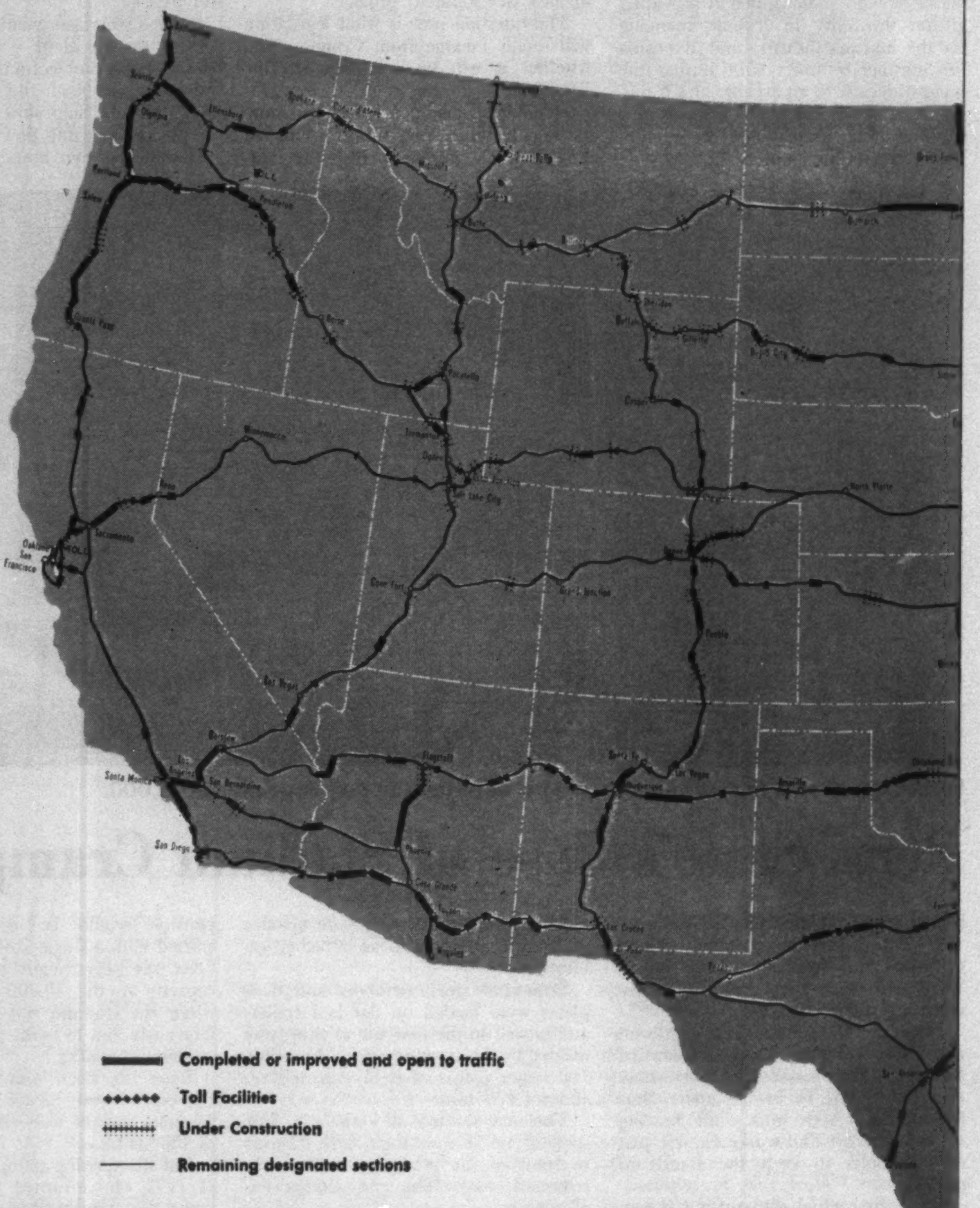
Interstate Highway System Moves

Any map that shows the status of construction on the National System of Interstate and Defense Highways still resembles a bunch of wiggly worms scattered more or less at random over the landscape. But those worms are gradually becoming one long snake.

According to the Bureau of Public Roads, more than one-fifth (8,855 miles) of the 41,000-mile system is open to traffic.

Construction is under way on 4,353 miles more; and engineering or right-of-way acquisition is in progress on another 10,436 miles. In all, some form of work has been completed or is in progress on 23,664 miles—over half the total.

Almost half the mileage now open to traffic—4,114 miles—has been built or improved under the federal-aid Interstate program, most of it on the 90-10 matching basis established by the 1956 Federal Aid Highway Act. Work on another 2,467 miles was financed by state and local governments, some of it on other federal-aid programs. Incorpo-


Seattle
Olympia
Ellensburg
Spokane
Portland
Salem
TOLL
Pendleton
Missoula
Butte
Grants Pass
Boise
Pocatello
Tremonton
Ogden
Salt Lake City
Winnemucca
Reno
Sacramento
Oakland
San Francisco
TOLL
Cove Fort
Grand Junction
Pueblo
Las Vegas
Barstow
Los Angeles
Santa Monica
San Bernardino
Flagstaff
Santa Fe
Las Vegas
Albuquerque
Amarillo
San Diego
Phoenix
Casa Grande
Tucson
Nogales
Las Cruces
El Paso
Pecos
Completed or improved and open to traffic
Toll Facilities
Under Construction
Remaining designated sections

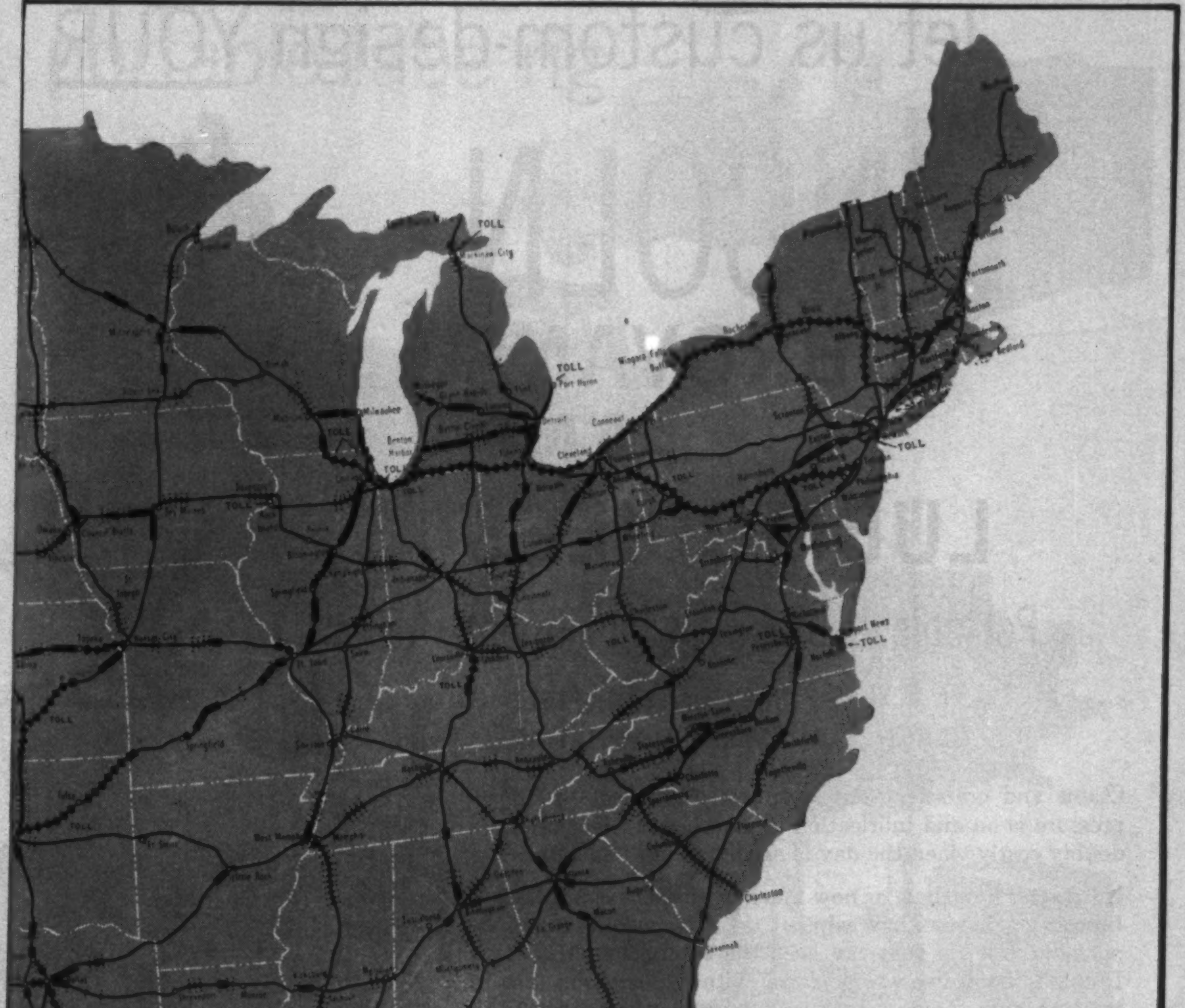
Along: Nearly 9,000 Miles Now

rated in the system are 2,274 miles of tollroads, bridges and tunnels.

Almost $8 billion has been put to work on the Interstate program since passage of the 1956 Act. Work completed since July 1, 1956, has cost $3.26 billion, of which $2.51 billion went for construction and $752 million for engineering and right-of-way acquisition. As of March 31, work estimated to cost $4.64 billion was under way or authorized, including $3.04 billion of construction.

In terms of total mileage under way, Texas far outstrips the other states, with 1,562 miles; 730 miles are open to traffic. Next in line is California, with 1,193 miles. Other states with large totals are Missouri (748.7) and Illinois (692.6). In terms of money, California leads the field, with $417 million in completed projects and another $391 million in projects under way or authorized. New York, Ohio, Pennsylvania and Texas are not far behind.

As of March 31, nearly $9 billion of ABC work is completed or under way.


TOLL
Mackinac City
Milwaukee
Benton Harbor
Port Huron
Detroit
Conneaut
Cleveland
Des Moines
St. Louis
Springfield
Newport News
Norfolk
Charleston
Savannah
Jacksonville
Daytona Beach
St. Petersburg
Tampa
Miami
New Orleans
Baton Rouge
Houston
Galveston
Corpus Christi
New Bedford
Portsmouth

Source: U.S. Department of Commerce
Bureau of Public Roads

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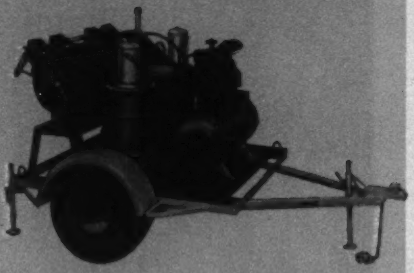

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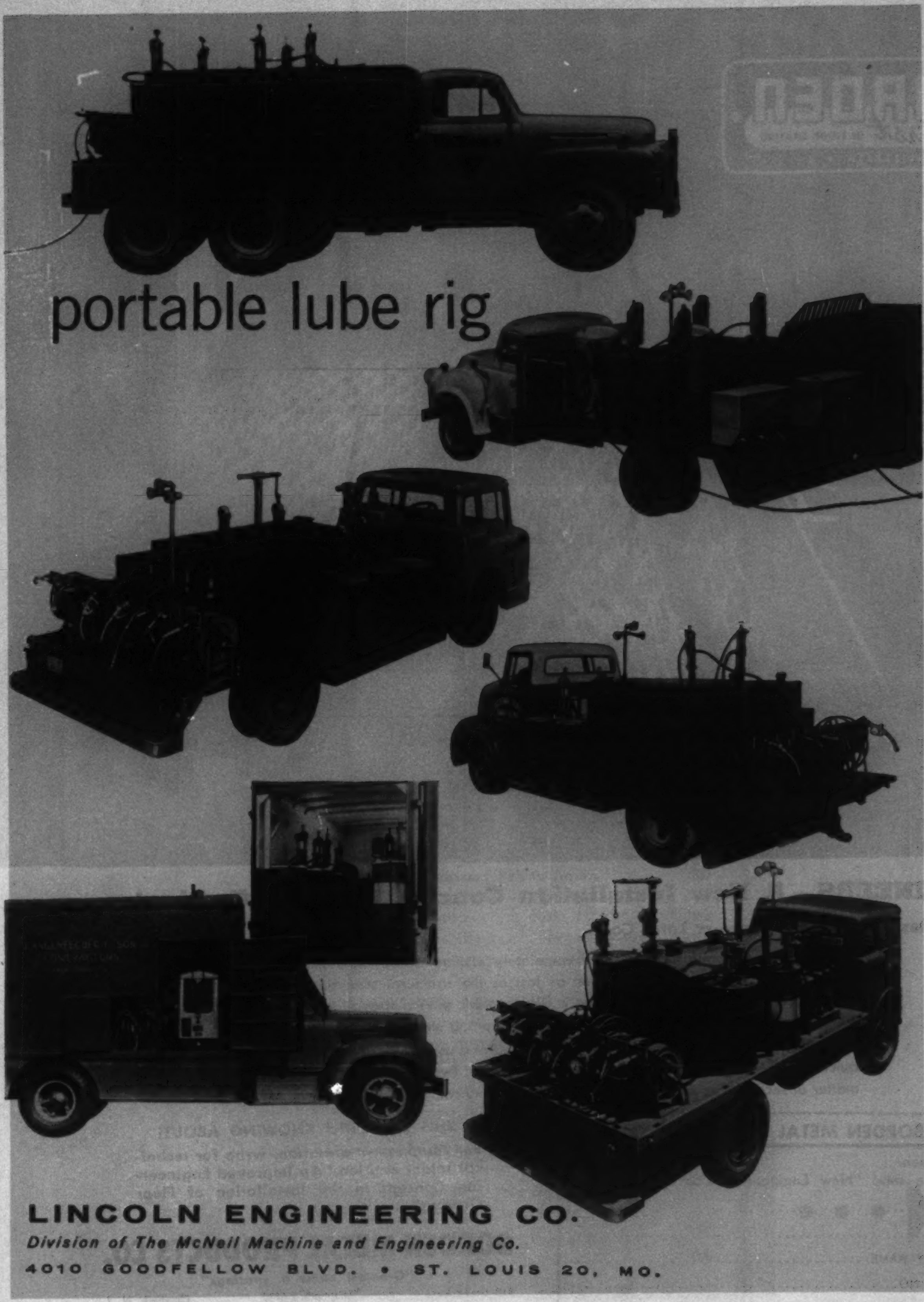
For more details write for Catalog No. 32 and Engineering Manual No. 33.

*Trade name registered

CIRCLE 50 ON READER SERVICE CARD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CIRCLE 52 ON READER SERVICE CARD

HIGHWAY COST REPORT AND OUTLOOK

2nd Quarterly Cost Roundup

What You Will Find . . .

Outlook: Record Costs to Level Off **page 54**
Labor rates and materials prices haven't stopped rising, but the rise is slowing down—the first good cost news in a long time. Although the building cost and construction cost indexes will reach new records in the next six months, they'll reach them only gradually.

1960 Bidding: 'Highway Robbery' **57**
The volume of highway work is fine—a record in the first six months; but is there much profit in all that work? Competition is dragging contract bid prices down so low that profits on road work are probably in the worst squeeze in history.

Highway Indexes and How They're Used **63**
Indexes measure the trend in contract costs. Use them right and you have a valuable business tool.

Hydro Work: Contract Prices Down **70**
Paradox: Cost of men, materials machinery and money is up; construction costs are down. Who's making up the difference? The contractor. Again it's the stiff competition—more bidders, fewer jobs.

Buildings: Selling Prices Hold **73**
With materials available at a good price and work lagging, building contractors are generally keeping their prices level.

The Four Ms **74**
Manpower: Wages rise again by hefty amounts.
Machines: Selective increases push up average prices.
Money: Edge is off 30-year high.
Materials: Cuts help slow cost rise.

Unit Prices **84**

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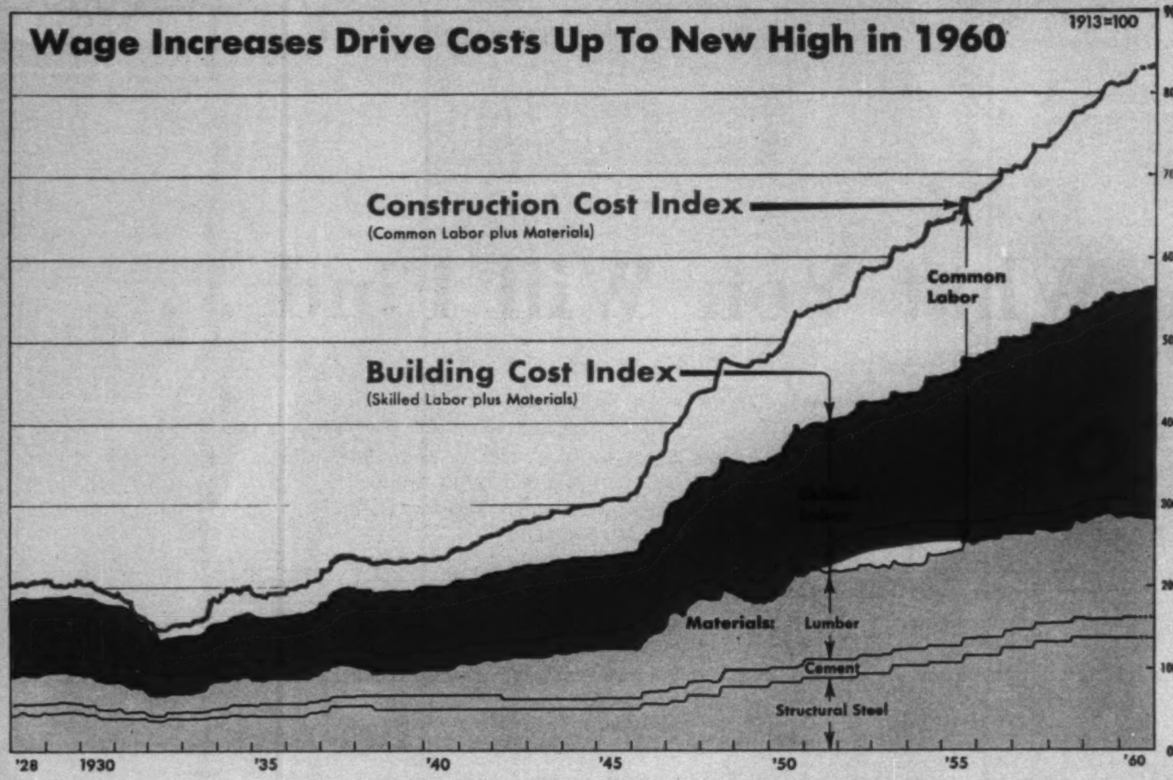
2nd Quarterly Cost Roundup

Costs Rise to a Record,



Wage Increases Drive Costs Up To New High in 1960

Construction and building costs climb to a new record this month as the 1960 wage push exerts its expected power.

The ENR 20-Cities Construction Cost Index hits 826.24 for June, based on 1913 costs as 100. ENR's Building Cost Index is 559.93, also based on 1913. In the first six months of '60, the Construction Cost Index has added 2.3% while the Building Cost Index is up 1.3%.

During the next six months ENR forecasts that the indexes will move only slightly higher than they are now, reflecting wage increases still to be negotiated in some of the 20 cities and deferred wage raises to become effective later for unions working under long-term contracts signed in previous years. Further lumber price reductions should help offset the effect of additional wage increases on the cost indexes, however.

Between now and September, the Construction Cost Index is expected to rise 0.5% to 830. And it will probably add another point in the final quarter bringing the forecast for December '60 to 830.67. This would be 2.9% greater than the December '59 value and the smallest annual increase since 1949 when costs declined for the first and only time in the post World War II period.

The ENR Building Cost Index should move up at an even slower pace than the Construction Cost Index from now until December. By September, it should add another 0.3%, putting it at 561.62. And there it should stay through the end of the year. This forecast would mean an over-all rise of only 1.6% in the Building Cost Index during the 12 months ending next December. You also have to go all the way back to 1949 to find a slower annual increase in this index.

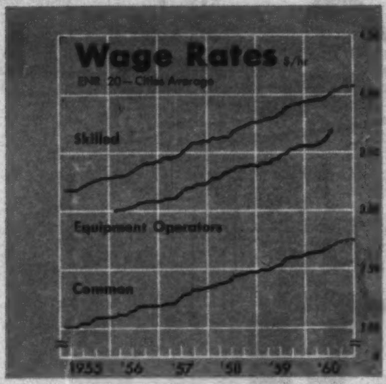
These new forecasts of December '60 costs are about the same as ENR predicted last December (ENR Dec. 17, 1959, p. 76). At that time, the Construction Cost Index was forecast to hit 830, the Building Cost Index 559.

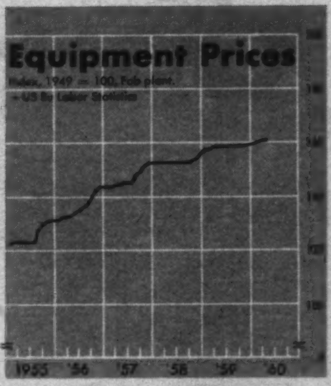
This year's slowdown in the rise of basic construction materials prices and labor rates is encouraging news to contractors and prospective construction buyers. However, this slowdown should not be interpreted as a signal that the continuous record of annual cost increases in the 11 years 1950-60 is about to be broken.

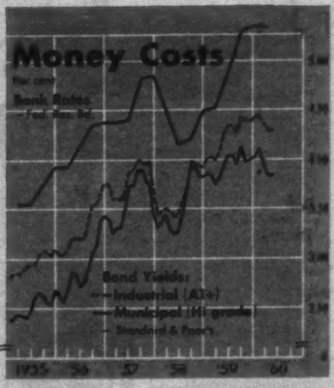
While materials prices, particularly the basic items of steel, cement and lumber are steady or slightly lower this year, long-term labor contracts won by unions provide additional big wage increases each year in major construction centers such as the ENR 20-Cities. Some of the new labor contracts signed this year call for larger wage hikes in later years than in 1960. So even if materials prices were to drop across the board in the next year or so—a highly improbable event—wage increases alone will keep nudging the ENR Cost Indexes to successive highs each year.

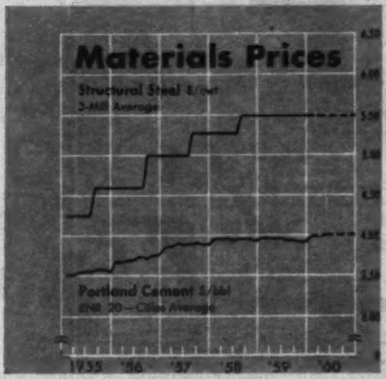
Moreover, increased labor costs, possible freight rate increases and fuel costs may lead to price increases in steel and cement next year. Steelworkers will receive another wage increase installment on December 1 provided by the 30-month contract signed early this year. If legislation now before Congress to raise the minimum wage is enacted, it could boost southern pine lumber prices, a repeat of the situation that happened when the minimum was upped to $1 per hour. Any increases in

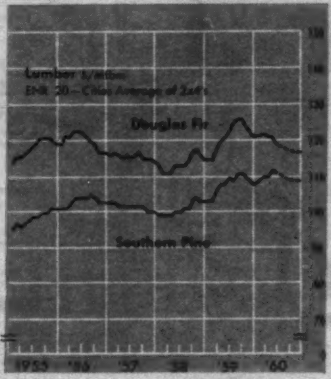
But Will Level Off Soon

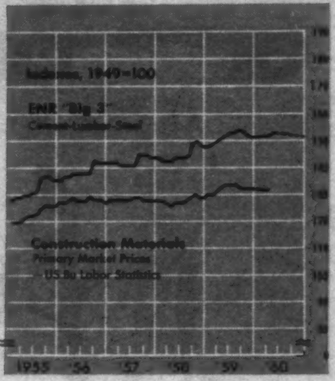












prices of these key materials will add to the effects of wage increases on 1961 construction costs, thus accelerating the cost rise. This year, a slight dip in money costs and relatively stable list prices of new construction equipment have helped to ease the cost push on contractors.

Bank rates on loans for working capital and equipment purchases eased slightly in March. And the trend in over-all borrowing by business and individuals in the second quarter was such to cut the banks' need to borrow funds from the Federal Reserve Banks to serve as reserves against their loans. So it's possible that bank rates may cost less now than in March—in any case they aren't higher. Moreover, contractors should find it easier to obtain working funds from banks than six months ago, and much easier than at this time last year.

The downturn in long-term borrowing costs that continues this month will encourage prospective buyers of new construction to go ahead now with their projects. Not only is money a little cheaper, but costs are going to hold fairly steady for the next six to 10 months and all materials are readily available.

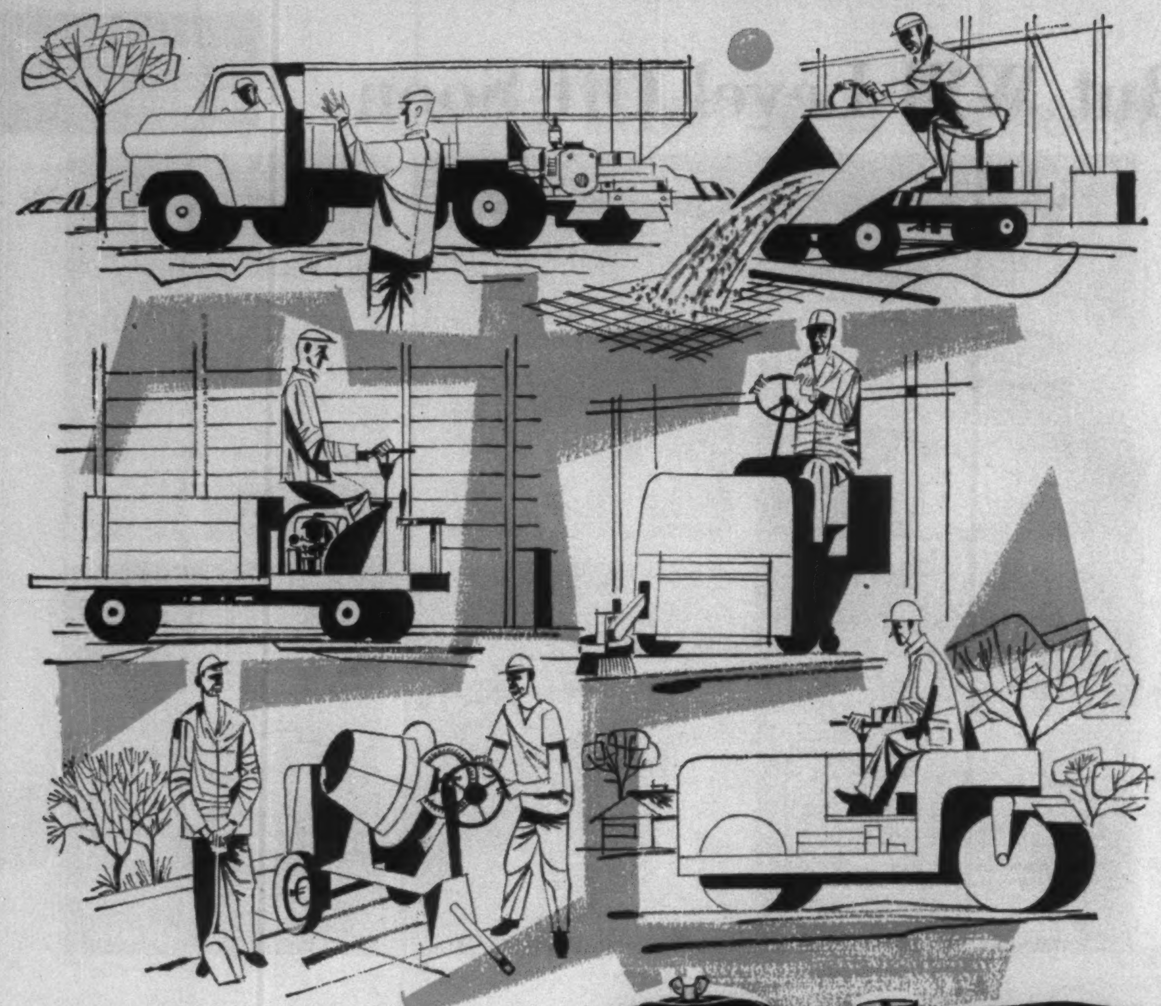
A few equipment manufacturers have been making a few price increases this year, on a selective basis. With sales running well below the industry's capacity to produce—and below the level of output where profit margins are assured—manufacturers are fighting harder for sales. There are reports that some equipment makers are shading prices on some deals, but the scattered price increases outnumber the few cuts that have been reported in list prices so far this year.

These two favorable developments, easier money and stable equipment prices, may not continue through the second half of this year, however. Both are linked, at least in part, to cutbacks last year and early 1960 in highways, bridges, housing (excluding private mass housing, which has been going strong since 1958) and state and local public works other than highways and bridges.

However, highway and bridge awards have come back strong in the second quarter; private mass housing continues to set a very fast pace and the small homebuilders' operations may well perk up with the expected expansion in mortgage financing by savings and loan associations. Other types of work are springing back to higher levels, too. So demand for new construction capital is likely to climb during the second half; equipment sales are likely to rally. The result could be a canceling out of the 1960 dip in money costs and more numerous price hikes for new construction equipment later on in the second half of the year.

So 1960 shapes up as a year when contractors get some relief in the battle to hold their costs down, protect dwindling profit margins. But the industry's capacity and eagerness to handle far more work than the record amount of new construction they will sign up this year points to many more months of rugged competition, tight bidding.

The pages that follow show how this vise of competition has squeezed bid prices on highways, bridges, irrigation and hydro-power projects. Though building contractors' selling prices have not been hit as hard—their price indexes are steady or rising slowly—it is obvious that the cost push is crowding their profit margins, too.



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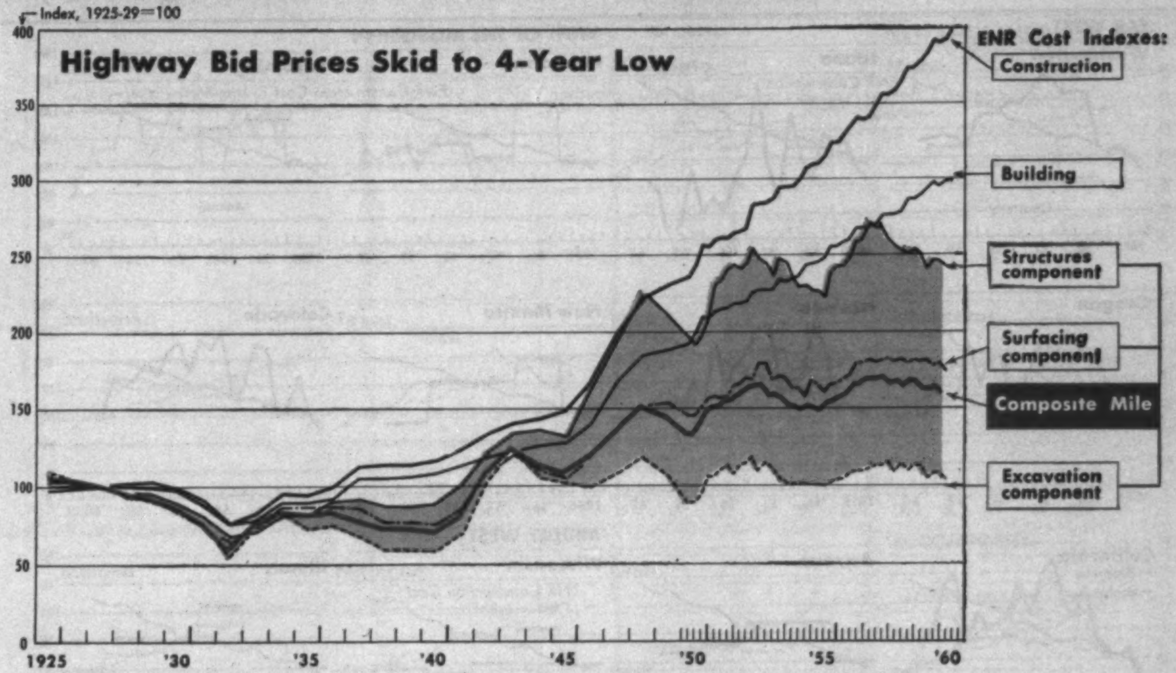
Highway Bid Price Trends



1960 Prices: 'Highway Robbery'

Many highway contractors are the victims of a new form of highway robbery. Competition for new work has forced contract prices so low that profits are probably in the worst squeeze in history. This despite a record January-June volume of new highway and bridge business.

Contractors cut their bid prices on highway jobs awarded in the first quarter in six of eleven states reporting quarterly bid price indexes to ENR. Moreover, the Composite Mile Price Index for federal-aid highway lettings across the country declined nearly 3% in the first quarter. This was the sharpest downturn since early 1959 for the U. S. Bureau of Public Roads quarterly index.

Stiffest cut came in Florida where the state highway department's index fell 18% to its lowest in two years. Price indexes dropped 4-5% in California, Colorado and Nevada. Oregon was off 3% while Washington State's index dipped 1%.

By contrast, five states bucked the first quarter downtrend. Indexes rose 4%-5% in Idaho, Michigan and Texas. New York's index jumped 13%, while South Dakota reported a 9% rise. However, only Idaho and Michigan seem to indicate a real improvement in prices, from the contractor's standpoint. And at that, first-quarter bids on Idaho jobs were still 5% below a year ago and 2% under the first quarter two years ago. Bids on Michigan highways were 5% above a year ago but 2% under the first quarter of 1958.

The New York bid price rise was the usual for the first quarter. Prices were no higher than a year ago and were off 11% from the first three months of 1958. Texas recouped only a small fraction of a 15-month decline in bid prices and the first quarter remained 5% under a year ago.

Moreover, first-quarter bid prices in 10 of these 11 states were substantially less than the highs reached during 1956 or 1957, the first two years of the Interstate highway program. And Texas, the other state, was buying highways a lot cheaper than at the 1958 peak.

The number of contractors bidding increased in the first quarter in California, Florida, New York, South Dakota and Texas. Bids averaged from 7.5 per project in California to a whopping 13.3 in South Dakota. Florida's 8.3 average jumped from 6.5 in the fourth quarter and 5.3 a year ago.

There were slightly fewer bidders in the first quarter than fourth quarter for Michigan and Oregon projects which averaged 7.7 and 6.8 bidders, respectively. And Idaho's average held at 5.9 bids.

The average in Nevada dropped to 5.0 from the fourth quarter's 9.5, while Washington had a decline to 6.4 from 8.2. In both of these states the 1959 bid prices had been running so low that some contractors may have turned away temporarily from the bidding tables.

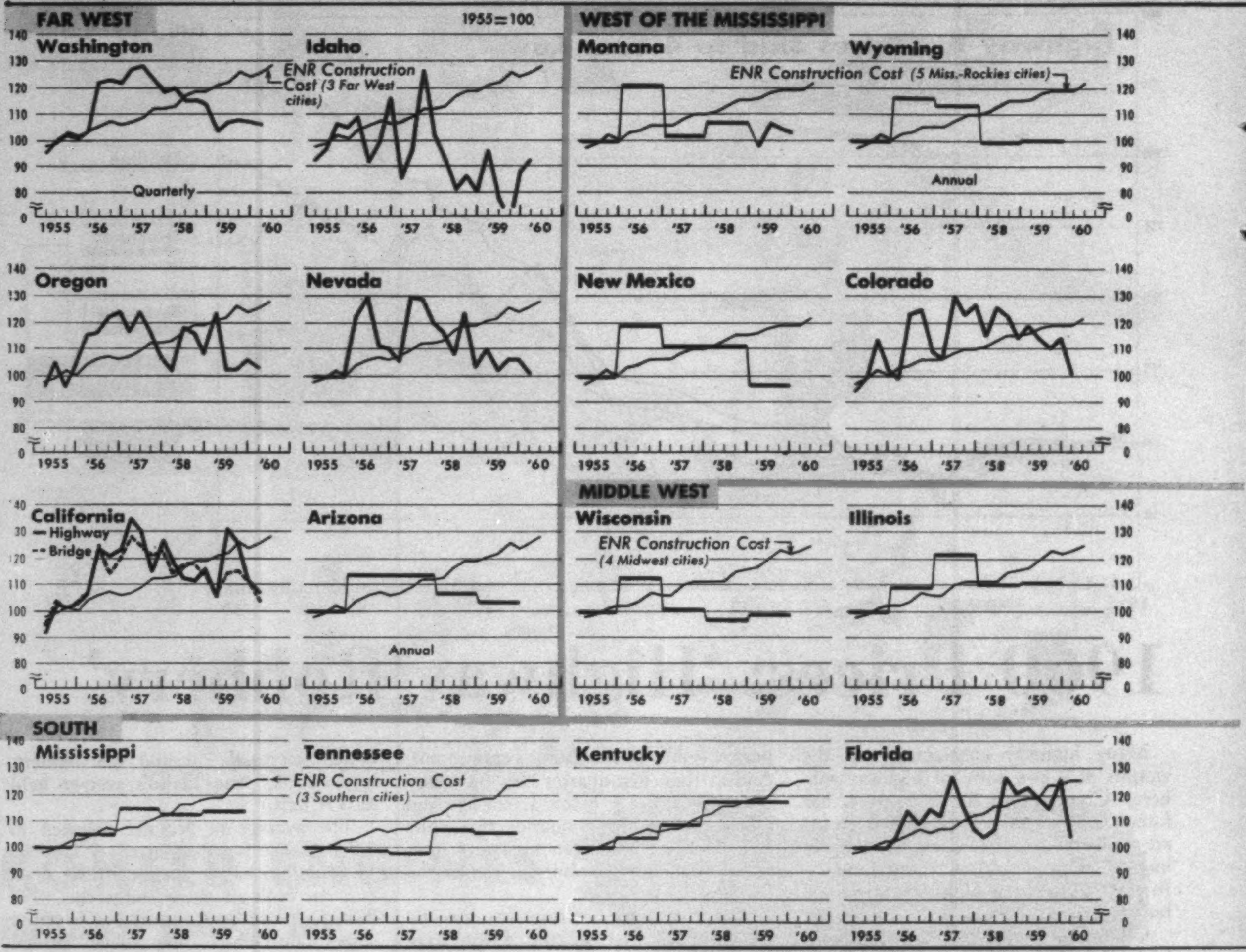
Contractors will find it tough to make highway work more profitable during the rest of this year, even though Interstate work soars. First-quarter lettings hadn't yet reflected this upturn in awards. But alert contractors were aware of the coming spurt in bid calls, while they figured rock-bottom bids for the low volume of first-quarter lettings. Furthermore, many highway contractors who didn't get a chunk of the 1959 highway market may compete with sharper pencils this year. ENR's analysis of new business of contractors taking on $100,000 per year in total 1959 contracts shows that 11% fewer had new highway work in '59 than '58 and 27% fewer won bridge awards.

So bid prices for second-quarter lettings will probably show little recovery, remain well below the highs set in the late 1950's.

2nd Quarterly Cost Roundup

Highway Bid Price Indexes

Contractor



Highway Bid Price Indexes

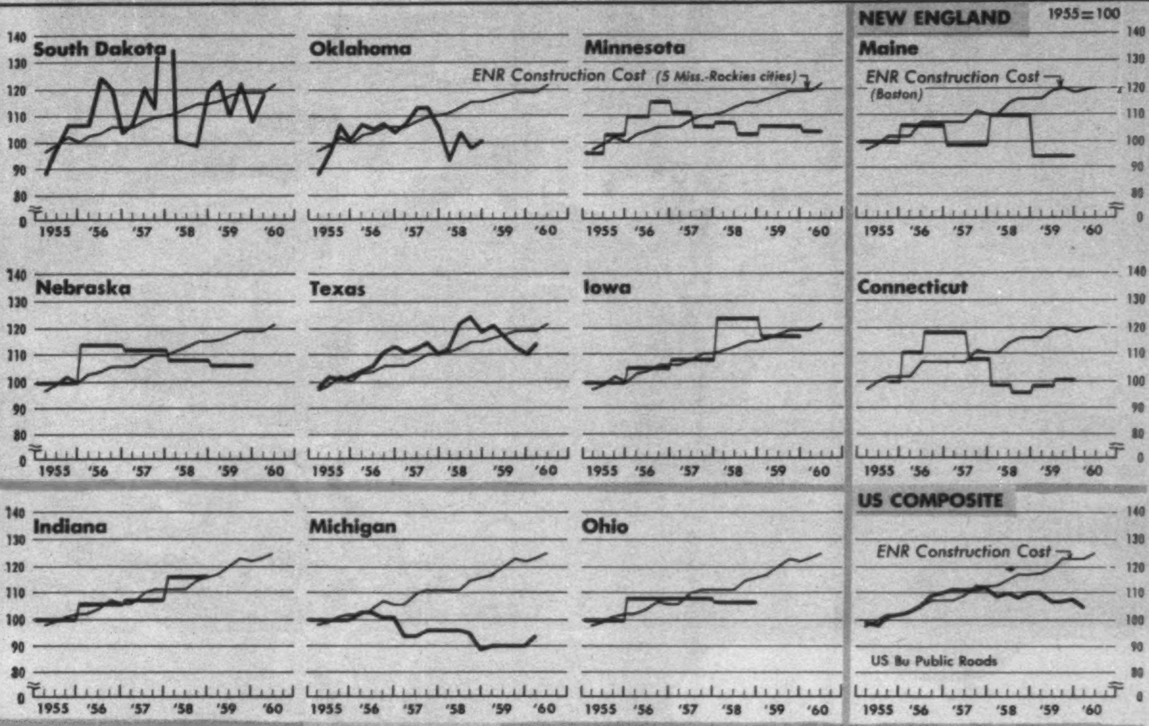
Region:	FAR WEST							MISSISSIPPI TO THE ROCKIES									
State:	Wash.	Idaho	Ore.	Nev.	California		Ariz.	Mont.	N. Mex.	Wyo.	Colo.	S. D.	Neb.	Texas	Minn.	Iowa	Okla.
Base yr:......	1940	1950	1940	1955	Hwy. 1940	Bridge '39–'40	1940	1950	'38–'41	1940	1949	1940	'37–'41	'49–'53	1940	1949 a	1940
1940	100.0	.....	100.0	.....	100.0	99	100.0	.....	101.2	100	.....	100.0	93.2	.....	100.0	.....	100.0
1946	163.0	.....	155.9	.....	179.7	182	186.0	.....	180.1	186	.....	177.6	162.4	.....	147.1	.....	.....
1949	214.5	.....	181.1	.....	190.7	201	198.8	.....	179.2	167	100.0	217.0	207.1	89.8	160.0	100.0	180.7
														97.3	148.5	89.6	166.5
1950	169.2	100.0	170.8	.....	181.2	202	165.9	100.0	210.5	169	82.2	176.3	191.3 a	104.0	185.3	104.1	182.0
1951	202.8	110.2	194.7	.....	225.0	248	201.4	104.8	206.1	209	87.7	229.4	223.7	105.6	203.0	112.6	192.3
1952	204.5	96.9	202.3	.....	225.9	235	228.4	90.4	248.7	236	101.5	212.6	231.6	102.7	175.8	106.1	192.3
1953	208.3	114.2	182.0	.....	215.3	229	214.1	84.3	246.9	196	87.7	197.1	223.8	96.3	174.9	95.5	168.6
1954	189.8	95.9	168.5	.....	193.5	219	193.3	75.3	214.6	175	82.8	168.6	204.4	97.0	188.8	95.4	165.2
1955	181.9	113.3	162.3	100.0	205.7	228	190.9	86.6	217.1	210	81.4	177.0	212.2	105.0	211.4	98.8	185.7
1956	**214.1**	**118.3**	**193.8**	**118.2**	**247.3**	**265**	**217.8**	**104.8**	**258.7**	**245**	**92.8**	**198.8**	**241.1**	**100.6**	**207.8**	.....	**196.5**
1957	**226.4**	**116.1**	**187.8**	**124.3**	**264.3**	**283**	**218.4**	**88.2**	**241.5**	**238**	**97.3**	**205.6**	**237.7**	**107.4**	**209.3**	.....	**201.7**
Q 1	231.4	95.9	187.7	105.5	277.7	292	.....	.....	.....	...	86.4	189.0	.....	108.3	H 1:	.....	197.7
Q 2	232.2	109.0	202.0	130.4	266.9	283	.....	.....	.....	...	105.4	213.7	.....	110.1	200.0	.....	209.1
Q 3	225.1	143.4	188.0	128.7	237.5	275	.....	.....	.....	...	100.0	200.0	.....	106.9	H 2:	.....	209.2
Q 4	216.7	116.2	173.4	119.8	262.1	281	.....	.....	.....	.....	103.5	390.4 b	.....	115.3	197.4	118.0	197.2
1958	**211.4**	**96.4**	**180.1**	**113.3**	**236.5**	**267**	**203.4**	**92.5**	**241.7**	**209**	**96.1**	**184.5**	**229.8**	**109.2**	**H1:**	.....	**188.4**
Q 1	217.7	105.8	166.1	117.2	241.8	250	.....	.....	.....	.....	93.7	179.6	.....	118.7	201.2	.....	172.1
Q 2	210.1	92.1	190.8	108.0	231.0	268	.....	.....	.....	...	102.5	177.1	.....	120.8	H 2:	.....	194.0
Q 3	211.0	97.0	188.7	124.2	228.5	268	.....	.....	.....	...	99.9	175.9	.....	115.2	194.9	.....	181.3
Q 4	206.6	90.5	174.9	103.3	238.5	259	.....	.....	.....	...	92.7	209.8	.....	.....	.....	.....	.....
1959	**194.0**	**93.6**	**176.3**	**104.6**	**239.7**	**260**	**198.7**	**89.0**	**210.2**	**211**	**92.9**	**200.7**	**224.2**	**111**	**200.9**	**111.6**	.....
Q 1	189.0	97.2	201.4	110.0	216.1	245	.....	85.3	.....	...	97.2	216.9	.....	117.0	H 1:	.....	.....
Q 2	194.6	92.5	165.4	102.4	270.4	260	.....	91.4	.....	.....	92.5	194.1	.....	112.1	205.0	.....	.....
Q 3	196.9	89.3	165.4	105.7	260.3	262	.....	90.0	.....	...	89.3	215.5	.....	108.4	H 2:	.....	.....
Q 4	195.4	93.0	172.8	106.2	229.1	253	.....	89.00	.....	...	93.0	191.2	.....	106.5	199.0	.....	.....
1960																	
Q 1	192.8	103.8	167.3	101.2	219.8	237	.....	80.6	.....	...	88.1	208.2	.....	110.9	196.0est	.....	.....

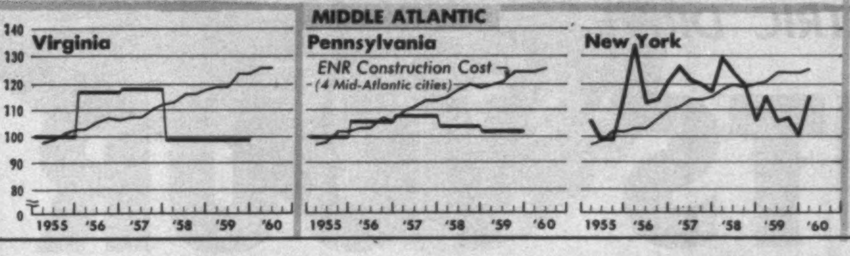
*aComputed by ENR from average unit prices and quantities

*b Index distorted by unusual projects

*c 9-months aver.

Competition Cuts Highway Prices





ENR Regional Construction Cost Indexes include these cities:

FAR WEST	Los Angeles, San Francisco, Seattle
MISS. TO ROCKIES	Dallas, Denver, Kansas City, Minneapolis, St. Louis
MIDWEST	Chicago, Cincinnati, Cleveland, Detroit
SOUTH	Atlanta, Birmingham, New Orleans
MIDDLE ATLANTIC	Baltimore, New York, Philadelphia, Pittsburgh
NEW ENGLAND	Boston

Reported by State Highway Departments and the U. S. Bureau of Public Roads

Region:	MIDWEST					SOUTH					MID-ATLANTIC		NEW ENGLAND		U. S.
State:	Wis.	Ill.	Ind.	Mich.	Ohio	Miss.	Tenn.	Ky.	Fla.	Va.	Pa.	N. Y.	Me.	Conn.	Composite
Base yr:	1955 a	'37–'41	1953	1940	'37–'41	'37–'41		'38–'41	1950	'37–'41	1940	1940	'37–'40	1939	1940
1940	.....	91	.....	100.0	94	100.4	94.0	99.3	.....	95.8	100	100.0	...	93.9	100.0
1946	.....	142	.....	155.8	155	163.4	184.7	172.2	.....	198.9	171	162.8	104	170.1	166.1
1949	.....	162	.....	149.0	170	182.7	199.9	190.3	94.9	203.6	193	202.8	148	184.6	203.6
1950	.....	158	.....	151.5	180	175.5	203.2	184.3	100.0	190.8	192	175.4	153	177.9	192.4
1951	.....	189	.....	173.0	204	206.5	202.7	204.7	128.9	247.1	216	208.7	173	218.4	214.7
1952	.....	195	.....	177.0	203	227.4	211.8	213.9	120.5	258.4	205	207.5	195	226.7	226.9
1953	.....	192	100.0	178.8	211	186.8	213.4	206.8	103.0	226.2	209	245.8	170	219.0	223.7
1954	.....	187	86.5	168.0	201	195.0	198.7	196.0	100.3	203.8	208	240.6	179	222.9	211.1
1955	100.0	179	86.9	181.9	197	180.7	202.6	202.7	109.7	223.4	199	214.8	171	243.9 c	213.4
1956	112.8	195	91.9	185.4	213	190.0	200.1	210.0	122.2	261.3	211	252.2	182	279.6	228.1
1957	**101.3**	**218**	**93.2**	**173.0**	**212**	**207.7**	**199.1**	**221.2**	**127.2**	**262.7**	**214**	**266.5**	**169**	**276.3**	**237.5**
Q 1	.....	...	.....	171.6	...	.....	.....	.....	122.9	.....	...	273.4	...	......	237.0
Q 2	.....	...	.....	.....	...	.....	.....	.....	138.8	.....	...	261.9	...	289.2 b	237.2
Q 3	.....	.....	.....	174.3	...	.....	.....	.....	127.5	.....	...	258.3	...	......	237.3
Q 4	.....	...	.....	.....	...	.....	.....	.....	116.9	.....	...	251.1	...	263.4 c	238.3
1958	**97.4**	**196**	**101.1**	**171.1**	**211**	**203.9**	**216.7**	**239.6**	**126.2**	**222.2**	**206**	**257.2**	**188**	**236.8**	**233.9**
Q 1	.....	...	.....	175.0	...	.....	.....	.....	114.2	.....	...	277.1	...	......	233.4
Q 2	.....	...	.....	.....	...	.....	.....	.....	116.9	.....	...	266.8	...	239.9 b	235.3
Q 3	.....	...	.....	172.7	...	.....	.....	.....	139.0	.....	...	257.5	...	......	231.4
Q 4	.....	...	.....	162.7	...	.....	.....	.....	132.6	.....	...	227.3	...	233.6 c	235.3
1959	**99.4**	**198**	**101.1**	**163.7**	...	**206.0**	**214.7**	**238.5**	**129.3**	**220.5**	**203**	**230.3**	...	**242.1**	**229.9**
Q 1	.....	...	.....	163.0	...	.....	.....	.....	135.4	.....	...	246.7	...	......	234.1
Q 2	.....	...	.....	164.1	...	.....	.....	.....	130.1	.....	...	226.8	...	239.2 b	227.8
Q 3	.....	...	.....	163.8	...	.....	.....	.....	126.2	.....	...	229.6	...	......	228.2
Q 4	.....	...	.....	163.2	...	.....	.....	.....	138.7	.....	...	217.9	...	245.0 c	229.6
1960															
Q 1	.....	...	.....	170.8	...	.....	.....	.....	114.1	.....	...	246.3	...	.....	223.3

*a Computed by ENR from average unit prices and quantities *b June *c December

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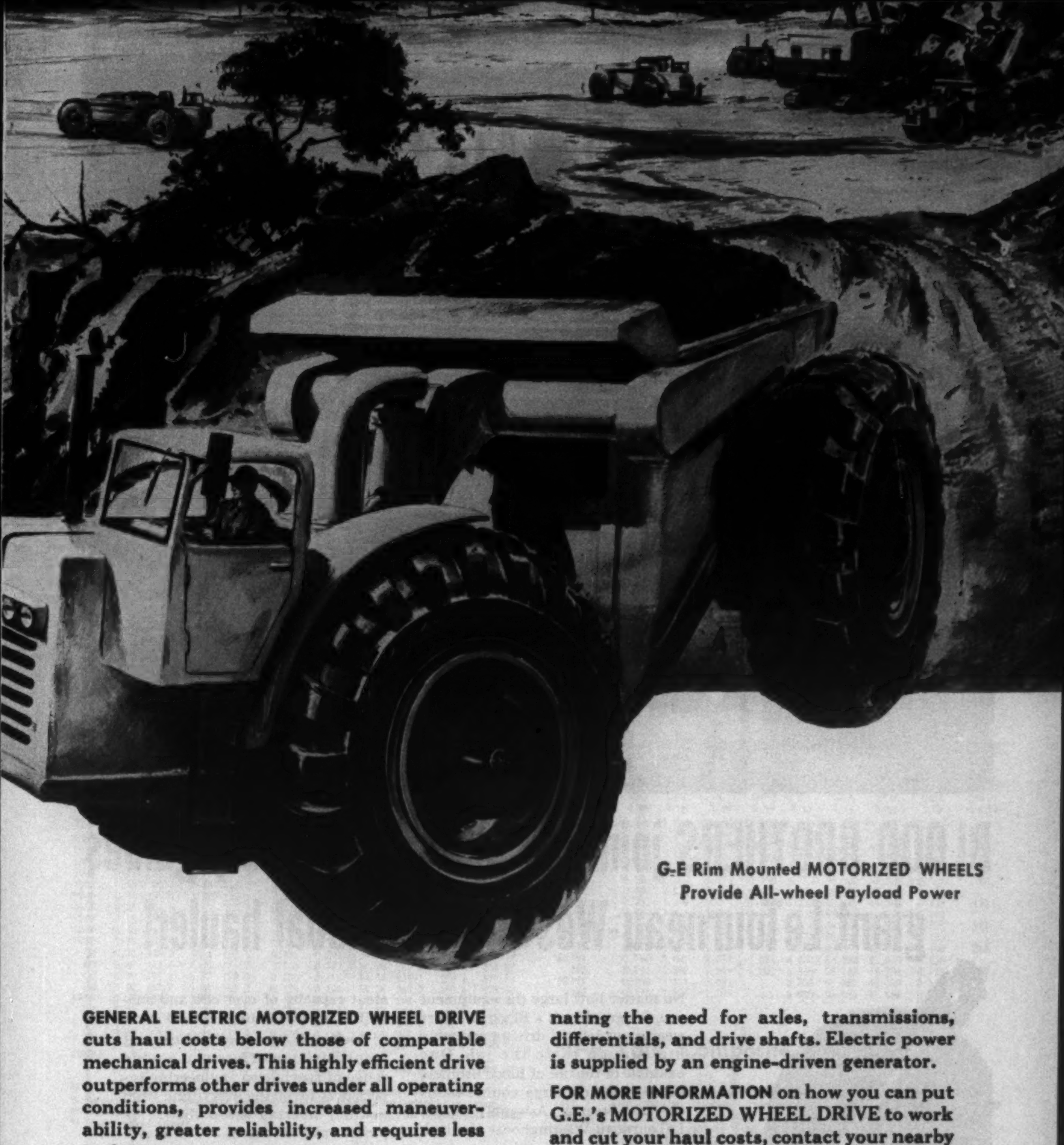
CIRCLE 60 ON READER SERVICE CARD



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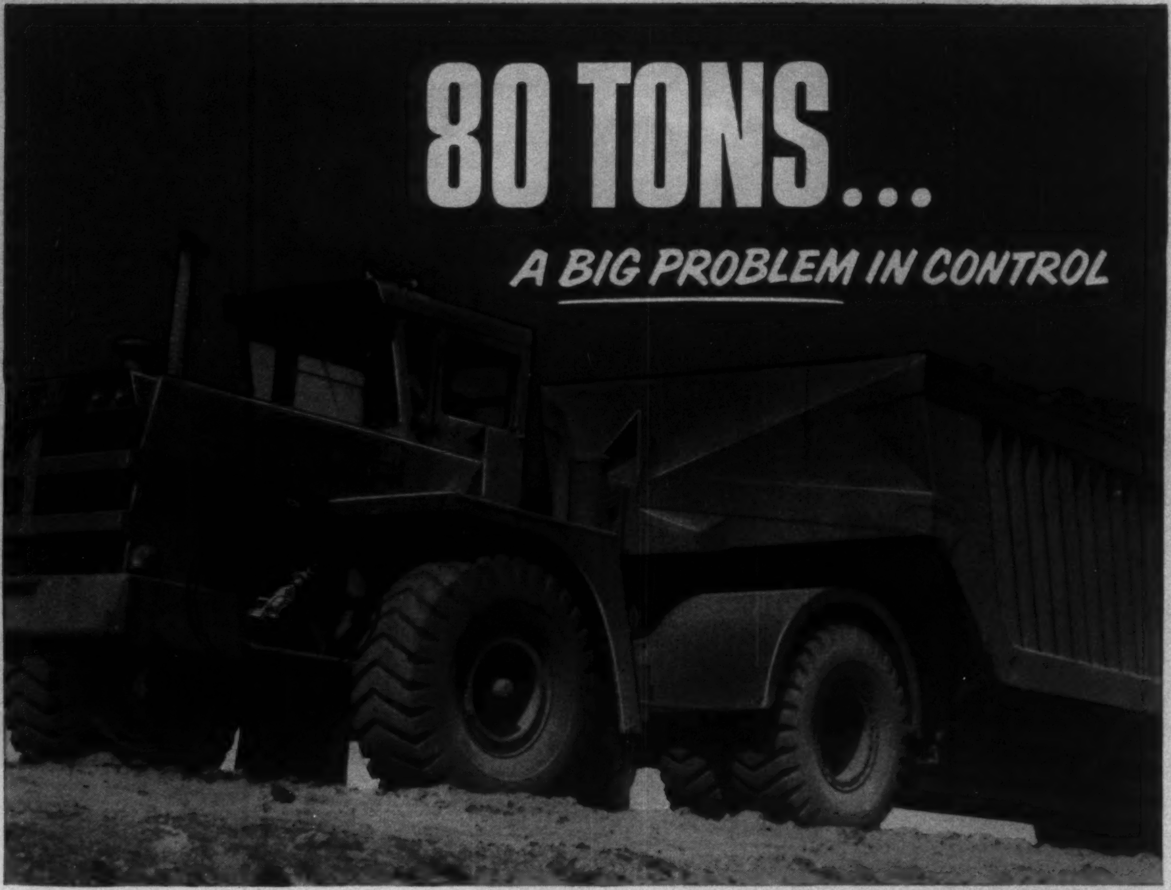
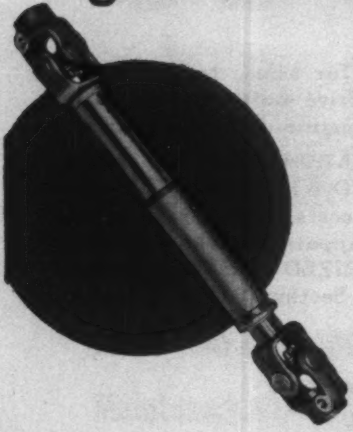


BLOOD BROTHERS jointed steering assembly guides giant LeTourneau-Westinghouse coal hauler!



No matter how large the equipment you design, there's a Blood Brothers steering or jointed driving assembly big enough to do the job. One example of the use of Blood Brothers components on large equipment is the L6S Steering Assembly on the LeTourneau-Westinghouse Haulpak Coal Hauler.

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How States Figure Their Indexes

Highway bid price indexes measure the trend in contract costs of new construction by repricing representative bid items commonly included in state highway and bridge projects. Most state highway departments that compute these indexes do it annually, but a dozen compute them quarterly, two have a semi-annual and Texas has a monthly index.

Selecting bid items on the basis of quantities used in their construction programs, highway engineers use this sample of total contract costs to construct an index to guide them in updating or checking their cost estimates.

The fewer the bid items used in the index, the easier and quicker it is to compute the index. Most states reporting their indexes to ENR use anywhere from six to nine different bid items. Most commonly used are:

1. Excavation (selected class).
2. Subbase.
3. Gravel or crushed rock surface.
4. Liquid asphalt.
5. Asphaltic concrete surface.
6. Plant mix surface.
7. Cement concrete pavement.
8. Concrete (selected class).
9. Structural concrete.
10. Reinforcing steel.
11. Structural steel.
12. Culvert pipe (metal or concrete).

Highway engineers compute the average contract unit price for the total quantity of the bid item included in lettings during the index period (month, quarter, six months or year). Then they multiply the average bid price of each item by a specific quantity to be included in the index. The quantity weight is generally based on the average quantity of each material used during some selected base period (one or more years).

Summing the products of average unit prices times quantities gives the cost aggregate for the index period. Dividing this dollar cost aggregate by the aggregate in the base period, and multiplying the quotient by 100 gives the index. This index represents the current bid price for highway construction as a percentage of the base year's price. And it's easy to compute price changes from period A to period B, simply by dividing the index for B by the index for A.

Index changes reflect only price changes because quantity weights are constant. However, prices in some contracts reflect extremely small or extremely large quantities of a given item and these can be excluded from the average unit price to avoid a distortion in the composite index.

A few states use a somewhat different method of combining average unit prices into a composite index. They compute a price sub-index for each bid item. Then they weigh each sub-index by the percentage of the total cost aggregate in the base period and add to get the composite index.

U. S. Composite Mile Price Index

U. S. Bureau of Public Roads, 1925-29 = 100

Year	Excavation[1] 17,491 cy* Bid price	Excavation[1] 17,491 cy* Sub-index	Surfacing[2] 3,726 sy* Bid price	Surfacing[2] 3,726 sy* Sub-index	Structures: Reinf. steel 16,000* lb. Bid price	Structures: Struct. steel 4,325* lb. Bid price	Structures: Struct. concr. 68* cy Bid price	Structures: Comb. Sub-index	BPR Composite mile index	ENR Construction Cost index
25–'29	$0.35†	100.0	$2.22†	100.0	$0.052†	$0.067†	$22.15†	100.0	100.0	100.0
1928...	0.38	103.7	2.20	103.1	0.053	0.074	22.76	103.7	103.4	100.5
1932...	0.18	55.0	1.44	64.8	0.034	0.046	15.33	68.0	61.0	75.6
1939...	0.21	59.8	1.73	77.8	0.044	0.059	19.13	85.9	72.6	113.8
1948...	0.35	99.1	2.65	119.3	0.075	0.113	38.79	164.7	119.0	167.2
1949...	0.38	197.4	3.40	153.1	0.104	0.146	47.36	210.3	145.8	230.5
1955...	0.36	101.9	3.67	165.3	0.116	0.165	51.90	232.8	152.8	318.8
1956...	0.38	108.2	3.89	175.5	0.131	0.202	54.33	253.8	163.3	334.6
1957...	0.40	113.5	4.02	181.2	0.137	0.218	56.92	267.0	170.0	349.8
1958...	**0.39**	**112.5**	**4.02**	**181.1**	**0.130**	**0.193**	**54.92**	**253.3**	**167.5**	**366.8**
Q1	0.39	110.3	40.2	181.3	0.131	0.201	54.99	225.6	167.1	359.7‡
Q2	0.40	114.5	4.03	181.7	0.130	0.192	54.85	252.9	168.5	365.9‡
Q3	0.39	111.4	3.97	179.0	0.130	0.186	54.55	251.1	165.7	373.8‡
Q4	0.40	113.7	4.04	182.2	0.129	0.191	55.28	253.7	168.5	373.9‡
1959:	**0.38**	**109.1**	**3.99**	**179.9**	**0.127**	**0.184**	**53.42**	**246.5**	**164.6**	**385.3‡**
Q1	0.40	113.4	4.02	181.3	0.128	0.187	54.93	251.2	167.6	377.6‡
Q2	0.37	104.8	4.03	181.7	0.125	0.182	51.90	240.7	163.1	384.2‡
Q3	0.38	108.6	3.94	177.6	0.126	0.183	54.05	247.1	163.4	392.6‡
Q4	0.38	109.4	3.97	179.0	0.130	0.184	52.80	246.9	164.4	390.7‡
1960:										
Q1	0.36	103.7	3.80	175.4	0.124	0.182	52.75	242.6	159.9	392.8‡

[1] Common excav. plus other excav. Items expressed as equivalent common excav.

[2] Portland-cmt. concr. plus other surfacing expressed as equivalent portland-cmt. concr.

* Fixed quantities used for establishing price trend. † Prices used for base year index.

‡ Last month of quarter.

NEW ENGLAND

Connecticut Contract Price Indexes

Date	Structures	Grading drainage	Trunk line	Concrete pavement	Town aid	Composite
1939..........	100.00	100.00	100.00	100.00	100.00	100.00
1940..........	93.76	94.19	92.78	98.54	86.41	93.93
1945..........	138.65	175.09	160.97	138.04	168.62	151.47
1949..........	196.49	184.51	171.42	190.96	163.09	184.64
Jun '56.......	289.62	294.43	239.53	267.90	265.94	270.98
Dec '56.......	323.74	317.54	245.31	270.01	276.53	288.06
Jun '57.......	327.46	319.46	245.88	272.87	263.64	289.19
Dec '57.......	270.97	293.55	243.48	261.15	253.97	263.43
Jun '58.......	239.80	267.73	218.04	249.19	243.02	239.91
Dec '58.......	235.06	254.02	213.79	245.36	229.65	233.62
Jun '59.......	242.15	261.13	225.02	241.46	228.30	239.15
Dec '59.......	253.29	267.04	227.09	246.27	230.52	245.04

MIDDLE ATLANTIC

Pennsylvania Average Unit Prices & Index

Year	Excavation Cl 1 $/cy	Excavation Cl 2 $/cy	CR aggr base 8" $/sy	Bit surf DP-1 $/sy	RCC pvmt 9" $/sy	Concrete Cl A $/cy	Concrete Cl B $/cy	Reinf steel bars $/lb	Annual Index '40=100
'40 H1......	$0.449	$1.799	$0.799	$0.734	$2.586	$22.151	$18.059	$0.044	...
H2......	0.417	1.680	0.808	0.695	2.515	22.522	17.601	0.045	100
'48 H1......	0.833	3.308	1.667	1.007	3.796	48.785	41.397	0.079	...
H2......	0.948	3.844	1.752	1.284	3.995	44.397	37.776	0.074	171
'49 H1......	0.965	4.042	1.986	1.241	4.985	75.156	45.747	0.113	...
H2......	0.834	3.823	1.771	1.199	4.744	54.130	40.820	0.108	193
'55 H1......	0.604	2.664	1.764	0.950	5.333	48.868	43.488	0.114	...
H2......	0.722	4.409	.....	1.016	5.254	56.127	44.305	0.118	199
'56 H1......	0.904	4.243	1.861	1.500	5.715	53.208	41.998	0.122	...
H2......	0.705	2.960	2.053	1.223	5.604	59.870	43.177	0.138	211
'57 H1......	0.856	3.632	1.836	1.153	5.755	58.320	42.588	0.128	...
H2......	0.676	3.079	1.793	1.153	5.901	60.634	42.843	0.130	214
'58 H1......	0.792	3.607	2.082	1.031	6.032	56.560	42.956	0.126	...
H2......	0.741	3.502	1.958	1.031	5.840	58.740	43.939	0.124	206
'59 H1......	0.809	3.333	2.031	.....	5.790	56.951	45.389	0.131	...
H2......	0.573	3.026	1.790	.....	5.620	55.686	41.936	0.126	203

New York 'Composite Mile' Cost Index

Year	Exc. uncl	Portland cement	Structural concrete	Steel bar reinf.	Structural steel	Cement concrete pavement	Total cost of composite	Index 1940=100
1940.....	.....	.....	......	....	....	.....	$16,116	100.0
1946.....	$0.60	$2.71	$33.30	$0.974	$0.116	$8.29	26,230	162.8
1949.....	.69	3.56	41.71	.125	.145	11.25	32,686	202.8
1955.....	.55	4.43	47.95	.14	.16	13.05	34,610	214.8
1956.....	.83	4.52	51.65	.15	.21	13.46	40,652	252.2
Q1....	.98	4.58	52.73	.16	.20	16.43	46,323	287.4
Q2....	.78	4.40	52.34	.15	.21	12.73	38,965	241.8
Q3....	.78	4.77	43.09	.14	.20	13.62	39,516	245.2
Q4....	.83	4.58	53.38	.16	.22	14.34	41,883	259.9
1957:	....	....	.....	....	....	.....	......	268.5
Q1....	.91	4.98	57.24	.15	.18	14.62	44,072	273.4
Q2....	.82	4.35	68.13	.13	.20	14.75	42,182	261.7
Q3....	.75	4.81	56.25	.17	.24	14.74	39,331	258.3
Q4....	.76	5.14	59.30	.15	.15	13.30	40,469	251.1
1958:	....	....	.....	....	....	.....	......	257.2
Q1....	1.03	5.09	52.67	.15	.18	13.16	44,655	277.1
Q2....	.90	5.36	54.88	.15	.15	13.23	43,012	266.8
Q3....	.88	4.98	54.49	.14	.15	13.06	41,513	257.5
Q4....	.62	4.75	49.40	.17	.16	12.85	36,664	227.3
1959:	....	....	.....	....	....	.....	......	.....
Q1....	.70	5.28	48.12	.15	.16	14.80	39,772	246.7
Q2....	.55	5.12	46.98	.14	.13	14.24	36,550	226.8
Q3....	.53	4.82	56.67	.13	.15	15.14	37,007	229.6
Q4....	.54	4.97	50.24	.13	.15	12.98	35,132	217.9
1960:....	....	....	.....	....	....	.....	......	.....
Q1....	.71	5.05	50.02	.14	.16	14.36	39,609	246.3

SOUTH

The highway bid price index computed by the Tennessee Department of Highways, the average unit prices and subindexes that are weighted and combined to make up the composite index are shown here for the first time in ENR. Though this table (bottom of the page) goes back to 1926, the Tennessee index is also available for 1920-25.

Florida Average Unit Prices & Index

Year	Excavation[1] cy	Lime Rock Base f[2] sy	Bituminous Mat'l[3] gal	Hot Bit. Mixes[4] ton	Stabilizing[5] sy	Struc. Conc[6] cy	Reinf. Steel[7] lb	PCC Pavement[8] cy	Composite Index
1949...	0.34	1.32	0.130	5.30	0.062	50.45	0.095	18.90	94.9
1950...	0.35	1.29	0.140	5.20	0.150	51.22	0.101	17.18†	100.0
1955	0.42	1.34	0.137	5.69	0.171	55.43	0.112	18.82	109.7
1956	0.52	1.44	0.146	5.72	0.201	59.79	0.132	17.18	122.2
1957	0.49	1.57	0.145	6.12	0.268	61.35	0.133	18.72	127.2
1958	**0.58**	**1.45**	**0.134**	**6.02**	**0.235**	**54.77**	**0.124**	**18.81**	**126.2**
Q 1	0.43	1.49	0.133	5.76	0.162	60.90	0.122	17.73	114.5
Q 2	0.57	1.30	0.126	5.67	0.226	41.55	0.132	.....	116.9
Q 3	0.63	1.51	0.135	6.22	0.304	66.97	0.122	21.78	130.0
Q 4	0.58	1.42	0.142	6.87	0.219	67.32	0.120	19.19	132.6
1959	**0.58**	**1.40**	**0.136**	**6.35**	**0.206**	**61.33**	**0.119**	**18.92**	**129.3**
Q 1	0.57	1.39	0.140	6.80	0.201	72.73	0.128	22.96	135.4
Q 2	0.50	1.29	0.140	6.41	0.214	62.92	0.117	18.50	130.1
Q 3	0.51	1.50	0.134	6.43	0.215	59.83	0.118	18.33	126.2
Q 4	0.77	1.42	0.127	5.70	0.185	56.29	0.117	20.73	138.7
1960									
Q 1	0.47	1.34	0.127	0.544	0.137	59.80	0.115	18.14	114.1

Bid items represent 51.5% of total highway construction cost. *f8.5-in *†Based on bids in 2nd & 4th quarters 1949

Kentucky Average Unit Prices & Index

Item	Unit	Point Weight*	Base '38–'41	Average Unit Price 1946	1949	1957	1958	1959
Grading—								
Roadway excavation..	cy	0.175	$0.2970	$0.570	$0.560	$0.46	$0.66	$0.57
Class "A" concrete...	cy	0.070	17.26	36.90	46.84	55.69	61.82	57.47
R.C. pipe culv, 24-in..	lf	0.035	2.905	4.60	4.88	6.25	6.58	6.68
Surfacing—								
Rock or gravel.......	ton	0.126	1.880	3.35	3.10	3.50	3.40	3.71
Oils...............	gal	0.021	0.0845	0.115	0.152	0.155	0.164	0.16
Ready-mix..........	ton	0.126	6.158	5.85	6.57	7.03	7.27	7.36
Port cem conc........	sy	0.042	1.802	3.31	3.09	4.92	5.60	6.27
Structures—								
Excavation..........	cy	0.014	1.145	2.98	5.25	5.88	6.13	6.35
Class "A" concrete...	cy	0.049	17.26	36.90	46.84	55.69	61.82	57.47
Structural steel......	lb	0.035	0.5090	0.103	0.157	0.312	0.232	0.25
Reinforcing steel.....	lb	0.007	0.04075	0.069	0.060	0.138	0.136	0.13
Total cost aggregate		.....	70.0	120.51	133.18	154.85	167.80	166.95
Composite Index.....		.....	100.0	172.2	190.3	221.2	239.6	238.5

* Multiply times price relative (ratio of current price to base price) to get component of current cost aggregate. The total current cost aggregate, divided by 70.0 (total cost aggregate in base period 1938–41) and multiplied by 100 gives current year's index, based on 1938–41=100.

Virginia Unit Prices & Indexes

Year	Excavation $/cy	Excavation Sub-Index	Surfacing $/sy	Surfacing Sub-Index	Structures Reinf. Steel $/lb	Structures Struct. Conc. $/cy	Structures Sub-Index	Composite Mile Index
1937–41...	$0.282	100.0	$1.012	100.0	$0.0494	$22.13	100.0	100.0
1946......	0.53	187.9	2.05	202.6	0.0790	49.36	209.6	198.9
1949......	0.55	195.0	2.01	198.6	0.1040	50.92	225.9	203.6
1955......	0.60	212.8	2.14	211.5	0.1229	58.56	261.2	223.4
1956......	0.79	280.1	2.16	213.4	0.1500	70.59	315.7	261.3
1957......	0.70	248.2	2.42	239.1	0.1513	73.63	327.1	262.7
1958......	0.54	191.5	2.11	208.5	0.1377	66.24	294.9	222.2
1959......	0.46	163.1	2.53	250.0	0.1239	57.93	259.4	220.5

Mississippi Average Unit Prices Index–1937-41=100

Year	Grading: Exc. uncl [a] $/cy	Grading: Topping [a] $/cy	Drainage: B conc culv [b] $/cy	Cement concrete pavement: Plain cmt $/sy	Cement concrete pavement: 7–5–7" RCC $/sy	Cement concrete pavement: 8–6–8" RCC $/sy	Cement concrete pavement: 9–6–9" RCC $/sy	Bit pavement: Asph. prime $/gal	Bit pavement: Cover mtls $/cy	Gravel: Surf course $/cy	Gravel: Stab aggr $/cy	Structures: Conc, B&C bri $/cy	Structures: Reinf stl. bri $/lb	Structures: Str stl $/lb	Structures: Timber treated $/Mbm	Structures: Piling timb [f] $/lf	Structures: Piling stl $/lf	Composite Index
1940.......	$0.212	$0.42	$20.48	$1.34	$1.51	$.176	$1.68	$0.094	$4.55	$2.18	$1.56	$23.36	$0.04	$0.05	$124.88	$1.04	$.....	100.36
1946.......	0.311	0.62	42.46	2.72	2.28	2.38	2.49	0.11	5.25	2.85	4.25	41.22	0.07	0.085	211.11	2.34	3.21	163.42
1949.......	0.312	0.71	45.852	3.64	2.99	3.269	3.291	0.155	7.076	2.337	2.218	46.534	0.102	0.114	232.91	2.133	2.735	182.69
1955*......	0.276	0.76	45.14	....	2.13[de]	2.50[de]	2.42[de]	0.157	6.43	2.90	3.19	47.25	0.115	0.12	255.75	2.02	3.66	180.67
1956.......	0.271	0.78	44.49	....	2.54	2.99	2.89	0.156	6.43	2.68	3.17	53.61	0.123	0.17	278.28	2.03	4.29	189.96
1957.......	0.316	0.90	48.61	....	2.45	2.88	2.79	0.159	6.88	3.11	3.36	63.08	0.134	0.19	313.97	2.20	4.33	207.74 R
1958.......	0.304	0.81	51.24	....	2.42	2.85	2.76	0.165	7.43	2.92	3.72	60.89	0.136	0.18	288.78	2.31	5.16	230.90
1959.......	0.301	0.96	47.72	....	2.78	3.28	3.17	0.167	7.32	2.79	3.57	55.04	0.134	0.153	350.00	2.04	5.02	205.97
Base prices	34.8%		8.2%	20.2%				9.8%		4.1%		23.1%						
37–41......	0.235	0.346	20.53	1.64	1.48	1.65	1.60	0.094	4.56	1.98	1.67	23.04	0.043	0.052	121.27	1.19	1.8	100.00
Sub wgt %.	64.1	35.9	8.2	0.3	34.8	1.6	63.3	50.3	49.7	32.1	67.9	44.9	12.4	27.1	1.5	6.6	7.50	

* First half of 1955. *a incl haul *b incl D conc *c first half of yr only *d convrtd from 6" uniform *e convrtd from 8" uniform *f creosoted *R revised

Tennessee Average Unit Prices & Indexes–1935-40=100

Year	GRADING: Excavation roadway, dry $/cy	Index (39.7%)	GRADING: Concrete Pipe $/lf	Index (1.1%)	GRADING: CM Pipe $/lf	Index (1.4%)	SURFACING: Concrete, plain $/sy	Index (46.8%)	STRUCTURES: Excavation Dry $/cy	Index (0.5%)	STRUCTURES: Excavation Wet $/cy	Index (1.2%)	STRUCTURES: Excavation Rock $/cy	Index (0.0%)	STRUCTURES: Concrete Class A $/cy	Index (8.0%)	STRUCTURES: Steel, reinf. $/lb	Index (1.3%)	Composite Price Index (100%)
1926......	0.40	107.5	2.30	115.6	2.25	130.1	2.18	53.7	1.05	65.9	3.22	59.1	5.50	73.1	20.75	103.9	0.05	113.6	110.3
1927......	0.32	86.0	2.76	138.7	2.50	144.5	2.55	62.8	1.35	85.0	5.00	91.7	8.00	103.4	22.25	111.4	0.05	113.6	112.3
1928......	0.35	94.1	2.57	129.1	2.45	141.6	1.58	38.9	0.93	61.1	5.50	100.9	8.62	114.6	21.81	109.2	0.04	90.9	91.1
1923......	0.33	88.7	2.48	124.6	2.03	117.3	1.74	42.9	1.09	69.4	4.26	78.2	7.75	103.1	20.82	104.2	0.04	90.9	91.8
1939......	0.33	88.7	1.93	97.0	2.19	126.6	1.79	44.1	1.10	70.1	4.70	86.2	7.27	96.7	19.60	98.5	0.04	90.9	92.7
1931......	0.29	78.0	1.83	92.0	1.75	101.2	1.42	35.2	0.81	51.6	3.15	57.8	3.90	51.9	16.88	84.5	0.04	90.9	78.6
1932......	0.24	64.5	1.42	71.4	1.49	86.1	1.34	33.0	0.82	52.2	3.46	63.5	4.21	56.0	13.40	67.1	0.03	68.2	68.0
1933......	0.35	94.1	1.76	88.4	2.00	115.6	1.63	40.2	0.95	60.5	3.50	64.2	4.83	64.2	17.30	86.6	0.03	68.2	89.1
1934......	0.39	104.8	2.00	100.5	1.52	87.9	1.55	38.2	1.28	81.5	4.54	83.3	6.16	81.9	19.46	97.4	0.04	90.9	92.5
1935......	0.40	107.5	2.20	110.6	1.83	105.8	1.85	45.6	1.48	94.3	5.55	101.8	7.06	93.9	20.85	104.4	0.04	90.9	102.3
1936......	0.39	104.8	2.13	107.0	1.62	93.6	1.85	45.6	1.67	106.4	5.25	96.3	7.47	99.3	20.17	101.0	0.05	113.6	101.0
1937......	0.41	110.2	1.76	88.4	1.61	93.1	1.93	47.5	1.57	100.0	5.36	98.3	7.89	104.9	19.55	97.8	0.05	113.6	104.5
1938......	0.32	86.0	2.06	103.5	1.92	111.0	2.03	50.0	1.54	98.1	5.54	101.7	7.61	101.2	19.64	98.3	0.04	90.9	97.6
1939......	0.34	91.4	1.79	89.9	1.68	97.1	1.86	45.8	1.61	102.5	5.57	102.2	7.58	100.8	19.70	98.6	0.04	90.9	95.3
1940......	0.31	83.3	–	–	1.76	101.7	1.98	48.8	1.52	96.8	4.96	91.0	6.08	80.9	19.46	97.4	0.04	90.9	94.0
1941......	0.57	153.2	2.12	106.5	2.21	127.7	2.20	54.2	1.74	110.8	6.34	116.3	9.09	120.9	26.45	132.4	0.05	113.6	132.1
1942......	0.61	164.0	2.54	127.6	–	–	2.65	65.3	1.75	111.5	9.00	165.1	10.66	141.8	29.40	147.1	0.06	136.4	148.0
1943......	0.45	121.0	2.50	130.2	–	–	2.43	50.9	2.75	175.2	9.50	174.3	11.50	152.9	32.50	162.7	0.06	136.4	126.9
1944......	0.70	188.2	2.39	120.1	–	–	3.03	74.6	2.35	149.7	9.00	165.1	10.62	141.2	38.46	192.5	0.06	136.4	170.4
1945......	0.85	228.5	2.17	109.0	1.67	96.5	2.94	72.4	2.47	157.3	9.14	167.7	11.94	158.8	38.50	192.7	0.07	159.1	186.0
1946......	0.69	185.5	2.18	109.5	2.14	123.7	3.47	85.5	3.17	201.9	9.67	177.4	12.90	171.5	43.77	219.1	0.07	159.1	184.7
1947......	0.91	244.6	3.09	155.3	2.78	160.7	3.34	82.3	3.53	224.8	9.26	169.9	12.65	168.2	50.55	253.0	0.09	204.5	209.3
1948......	0.97	260.8	3.32	166.8	2.81	162.4	4.62	113.8	3.71	236.3	9.49	174.1	14.10	187.5	50.75	254.0	0.10	227.3	248.0
1949......	0.64	172.0	3.42	171.9	3.29	190.2	4.15	102.2	3.11	198.6	9.01	165.3	12.89	171.4	46.98	235.1	0.10	227.3	199.9
1950......	0.68	182.8	3.25	163.3	3.25	187.9	4.14	102.0	2.76	175.8	7.03	129.0	14.55	193.5	46.84	234.4	0.10	227.3	203.2
1951......	0.53	142.5	3.47	174.4	3.37	194.8	4.85	119.5	3.41	217.0	7.91	145.1	14.16	188.3	50.92	254.9	0.117	265.9	202.7
1952......	0.52	139.8	3.66	183.9	3.20	185.0	5.03	123.8	3.31	210.8	8.88	162.9	14.16	188.3	52.40	262.3	0.129	293.2	211.8
1953......	0.48	129.0	3.60	180.9	3.00	173.4	5.40	133.0	2.50	159.2	7.00	128.4	11.00	146.3	48.00	240.2	0.11	250.0	213.4
1954......	0.44	118.3	3.55	178.4	3.30	190.8	4.90	120.7	3.80	242.0	9.80	179.8	14.80	196.8	49.00	245.2	0.11	250.0	198.7
1955......	0.54	145.2	3.18	159.8	2.85	164.7	4.70	115.8	3.30	210.2	11.89	218.2	15.21	202.3	45.89	229.7	0.10	227.3	202.6
1956......	0.49	131.7	3.95	198.5	3.70	213.9	4.55	112.1	3.66	233.1	12.44	228.3	14.90	198.1	56.82	284.4	0.13	295.5	200.1
1957......	0.44	118.3	4.01	201.5	3.56	205.8	4.75	117.0	3.39	215.9	11.11	203.9	13.50	179.5	56.00	280.3	0.14	318.2	199.1
1958......	0.45	121.0	4.24	213.1	3.95	228.3	5.30	130.5	3.50	228.7	14.42	264.6	14.31	190.3	61.36	307.1	0.13	295.5	216.7
1959......	**0.43**	**115.6**	**4.30**	**216.1**	**3.80**	**219.7**	**5.40**	**133.0**	**3.55**	**226.1**	**15.00**	**275.2**	**14.70**	**195.5**	**56.00**	**280.3**	**0.12**	**272.7**	**214.7**

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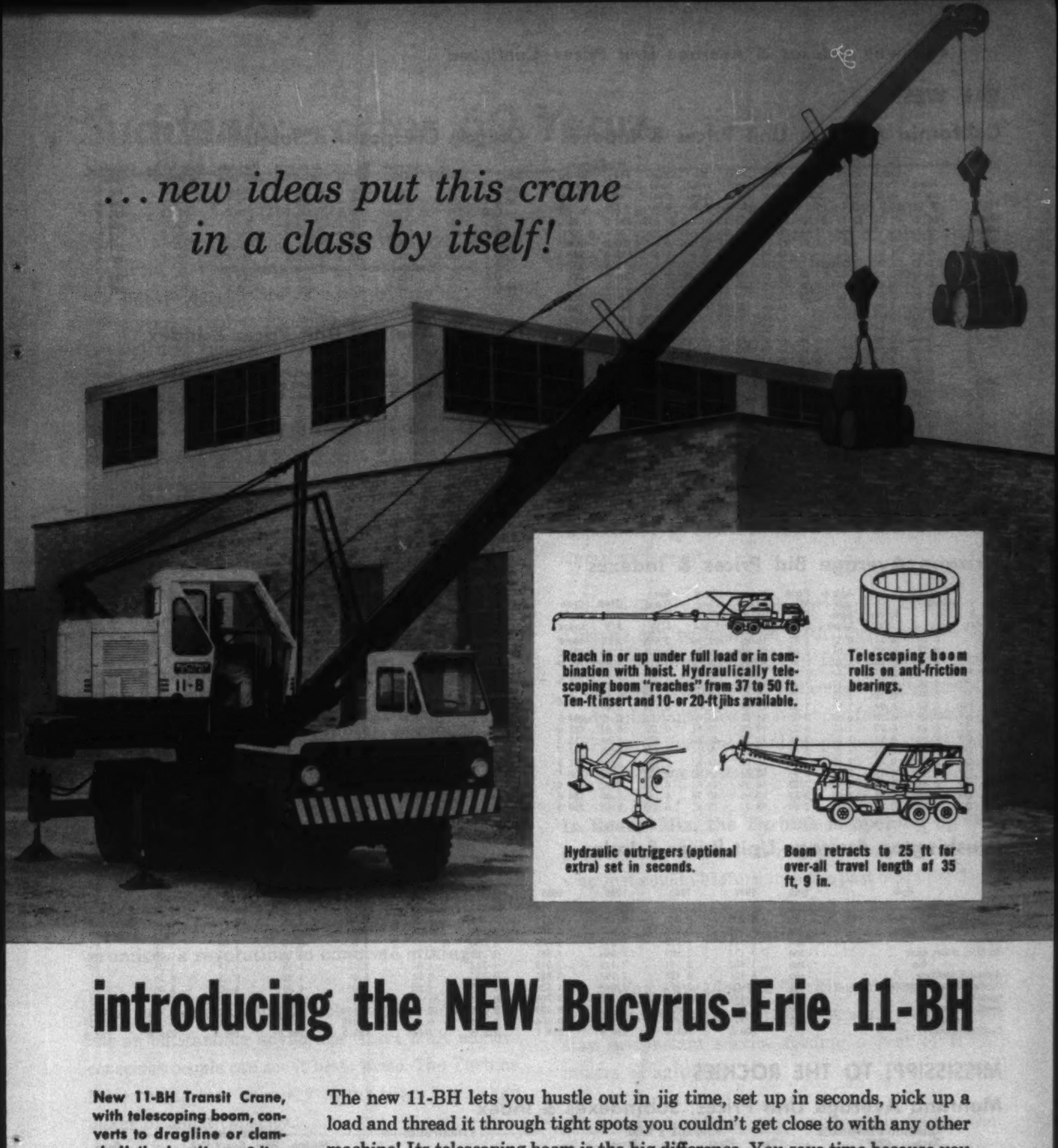

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. . . Highway Indexes & Average Unit Prices—Continued

FAR WEST

California Average Unit Prices & Indexes

Year	Rdwy excav $/cy	Crush run base $/t	Plant mix surf $/t	Asph conc pave $/t	PCC pave-ment $/cy	PCC struc-tures $/cy	Bar reinf steel $/lb	Struc-tural steel $/lb	Price Indexes Hwy const '40 =100	Price Indexes Bridge const '39-'40 =100
1940	$0.22	$1.54	$2.19	$2.97	$7.68	$18.33	$0.040	$0.083	100.0	99
1946	0.41	2.45	4.00	4.68	9.48	37.38	0.000	0.099	179.7	197†
1949	0.49	2.67	4.67	4.64	12.28	48.67	0.096	0.117	190.7	199†
'55 Q 1	0.39	1.69	4.55	.....	13.44	40.66	0.095	0.140	189.3	217
2	0.42	1.99	5.39	.....	14.46	51.36	0.098	0.136	212.4	237
3	0.41	2.33	5.43	5.70	13.46	49.64	0.093	0.132	208.6	229
4	0.37	2.00	5.52	4.00	15.05	52.72	0.099	0.144	212.6	237
'56 Q 1	0.40	2.08	5.40	6.50	14.05	52.51	0.105	0.166	219.5	245
2	0.51	2.06	6.27	.....	14.64	57.13	0.113	0.219	255.9	284
3	0.52	2.27	6.12	.....	15.57	56.32	0.121	0.178	249.1	260
4	0.52	2.21	**	5.93#	14.95	50.63	0.112	0.197	252.1	273
'57 Q 1	0.63	2.10	**	5.94	17.28	61.14	0.129	0.235	277.7	292
2	0.63	2.10	**	6.18	15.50	58.61	0.119	0.204	266.9	283
3	0.42	2.34	**	5.10	14.34	58.68	0.130	0.200	237.5	275
4	0.68	1.78	**	5.45	16.88	59.76	0.129	0.177	262.1	281
'58 Q 1	0.52	1.85	**	5.45	14.96	55.21	0.118	0.192	241.8	259
Q 2	0.48	1.73	**	5.67	13.77	54.44	0.125	0.158	231.0	268
Q 3	0.39	2.18	**	5.56	13.99	53.93	0.126	0.182	228.5	268
Q 4	0.52	2.10	**	5.74	13.55	55.20	0.122	0.165	238.5	259
'59 Q 1	0.41	1.82	**	5.37	14.00	49.40	0.108	0.165	216.1	245
Q 2	0.66	1.77	**	5.77	14.03	65.36	0.134	0.198	270.4	260
Q 3	0.53	1.80	**	5.70	15.54	58.16	0.130	0.237	280.3	262
Q 4	0.44	2.02	**	5.36	13.18	51.39	0.111	0.202	229.1	253
'60 Q 1	0.47	1.57	**	.....	13.30	48.16	0.098	0.196	219.8	237

† average of quarterly values * untrdt rock base substituted for crusher run at this point ** Combined with asphaltic concrete pavement in 4th quarter '56 # Asphaltic & Bituminous Mixes beginning 4th quarter '56 *§ For items and weighted average 1939–40 prices see ENR Dec. 6, 1956, p. 115

Arizona Average Bid Prices & Indexes

Year & Quarter	Roadway Excav-tion $/cy	Borrow $/ton	Aggre-gate Base $/ton	Plant Mix Surf. $/ton	Liq. As-phalt $/ton	Struc Conc Cl A $/ton	Bar Reinf Steel $/lb	CMP 24-in. $/lf	Com-posite Index
1940	0.38	0.31	0.53	1.67	16.63	19.26	0.048	2.72	100.0
1946	0.77	0.67	1.04	2.68	23.95	36.64	0.091	3.95	186.0
1949	0.79	0.36	1.03	2.92	32.01	43.80	0.112	4.89	198.8
1956: H1	0.62	0.37	1.10	2.70	40.75	46.27	0.126	6.06	217.8
H2	0.92	0.46	1.17	2.80	42.15	52.05	0.147	6.46	
1957: H1	0.91	0.35	1.45	2.72	43.08	47.23	0.140	6.47	218.4
H2	0.53	0.29	1.23	2.83	47.43	47.93	0.146	6.49	
1958: Q1	0.69	0.28	0.99	2.42	45.61	45.90	0.138	6.49	204.9
Q2	0.53	0.26	1.03	2.33	44.25	41.84	0.133	5.84	189.0
Q3	0.80	0.24	1.21	2.64	44.25	43.20	0.133	6.61	216.2
Q4	0.87	0.24	1.09	2.63	40.26	39.74	0.121	6.63	207.7
1959: Q1	0.64	0.32	1.00	2.94	38.95	42.83	0.132	5.82	197.0
Q2	0.48	0.27	1.14	2.58	53.51	43.72	0.129	6.07	198.4
Q3	0.58	0.36	1.47	2.57	39.94	45.82	0.133	6.93	214.9
Q4	0.56	0.28	1.05	2.53	32.95	40.75	0.127	6.00	184.8
1960: Q1	0.56	0.34	1.11	2.84	38.79	48.41	0.135	6.93	203.9

Oregon Composite & Sub-Indexes

Year	Grading	Cr rock surface	Bit mac surface	Asph conc pavement	Port cmt conc pave	Conc bridge & structs	Composite index
1940	100.0	100.0	100.0	100.0	100.0	100.0	100.0
'58 Q 1	166.1	125.3	178.6	110.2	279.7	286.9	166.1
Q 2	178.8	179.9	180.0	131.7	279.7	297.2	190.8
Q 3	169.7	179.1	190.4	116.0	268.7	304.3	188.7
Q 4	159.2	151.0	186.4	108.4	286.1	294.8	174.9
'59 Q 1	162.6	226.5	209.5	125.1	286.1	297.6	201.4
Q 2	159.0	138.1	172.1	112.0	284.8	260.6	165.4
Q 3	Index Suspended due to Lack of Federal Participation						
Q 4	180.0	145.9	182.2	102.2	262.8	279.0	172.8
'60 Q 1	170.6	140.5	163.4	100.6	267.1	287.2	167.3

Nevada Average Unit Prices & Index

Year	Roadway excava-tion $/cy	Borrow $/cy	Type 1 Gravel $/cy	Type 2 Gravel $/cy	Liquid asphalt $/ton	Plantmix surface $/ton	Class AA concrete $/cy	Reinf steel $/lb	24" Corr. metal $/lf	Com-posite Index 1955=100
1955	0.388	0.219	0.660	0.869	31.07	2.64	61.17	0.120	5.55	100.0
1956	0.506	0.300	0.845	0.893	39.86	2.48	78.98	0.144	6.08	118.2
'57 Av	**0.562**	**0.291**	**0.751**	**0.920**	**39.63**	**2.96**	**71.63**	**0.147**	**6.72**	124.3
Q 1	0.374	0.211	0.685	0.833	38.30	2.70	80.72	0.132	6.82	105.5
Q 2	0.590	0.240	0.806	0.962	39.60	3.12	95.87	0.152	6.65	130.4
Q 3	0.603	0.340	0.792	0.979	40.45	2.88	65.75	0.153	6.69	128.7
Q 4	0.366	0.300	0.625	0.880	41.13	3.25	74.47	0.156	7.48	119.8
'58 Av	**0.535**	**0.241**	**0.683**	**0.813**	**35.86**	**2.49**	**71.37**	**0.142**	**6.73**	113.3
Q 1	0.605	0.226	0.624	0.736	36.21	2.59	68.86	0.140	6.67	117.2
Q 2	0.399	0.227	0.861	0.971	36.11	2.31	86.10	0.174	6.59	118.0
Q 3	0.653	0.273	0.730	0.860	36.16	2.57	70.56	0.148	6.95	124.2
Q 4	0.444	0.250	0.596	0.749	34.86	2.41	68.16	0.133	6.64	103.3
'59 Av	**0.397**	**0.234**	**0.704**	**0.925**	**35.18**	**2.53**	**66.86**	**0.129**	**6.61**	104.6
Q 1	0.511	0.260	0.690	0.990	31.84	2.33	66.19	0.125	6.50	113.0
Q 2	0.299	0.288	0.709	0.923	38.29	2.72	72.41	0.144	6.64	102.4
Q 3	0.421	0.180	0.714	0.884	35.94	2.51	65.04	0.142	6.48	105.7
Q 4	0.436	0.180	0.704	0.805	36.86	2.51	65.04	0.142	7.00	106.2
'60 Q 1	1.11*	0.180	0.608	0.712	35.50	2.53	81.85	0.151	6.50	101.2

Idaho Contract Unit Prices & Index

Year	Excav uncl $/cy	Sprink-ling $/Mgal	Roll-ing $/hr	Crush-surf $/t	Asph all gr $/gal	Plant Mix $/t	Conc. Cl A $/cy	Reinf. steel $/lb	Comp. index '50=100
'50	$0.618	$1.11	$4.06	$0.95	$0.129	$1.92	$54.17	$0.112	100.00
'58 Q 1	0.482	1.49	7.12	0.934	0.179	2.09	67.43	0.155	105.8
Q 2	0.404	0.935	7.19	1.429	0.184	2.88	57.53	0.133	92.1
Q 3	0.437	1.245	6.16	1.077	0.177	3.33	61.58	0.155	97.0
Q 4	0.406	1.036	6.41	1.002	0.157	3.30	66.87	0.1466	90.9
'59 Q 1	0.659	0.988	8.22	1.104	0.167	3.12	73.68	0.1396	108.5
Q 2	0.364	1.37	7.36	0.983	0.194	....	65.57	0.1421	88.4
Q 3	0.240	1.02	7.31	0.768	0.180	2.71	68.10	0.1419	77.5
Q 4	0.427	1.13	7.27	1.148	0.170	3.48	60.49	0.1496	99.6
'60 Q 1	0.452	1.44	7.40	1.179	0.164	3.20	66.98	0.1362	103.8

Washington Average Unit Prices & Index

Item	Unit	Average Unit Prices 1940	1946	1949	1956	1957	1958	1959 Q1	1959 Q2	1959 Q3	1959 Q4	1960 Q1
Excavation, common	cy	$0.164	$0.259	$0.305	$0.283	$0.297	$0.27	$0.19	$0.23	$0.23	$0.23	$0.24
unclassified	cy	0.209	0.313	0.442	0.470	0.400	0.42	0.40	0.43	0.43	0.42	0.34
solid rock	cy	0.506	0.905	1.030	1.467	1.742	1.36	1.15	1.32	1.32	1.11	1.19
Ballast	ton	0.619	1.268	1.842	1.306	1.080	1.18	1.07	0.99	1.04	1.10	0.94
Surface, crush, base	ton	1.172	2.004	2.686	1.361	1.296	1.22	1.50	1.22	1.35	1.25	1.14
top	ton	1.152	2.181	2.412	1.549	1.324	1.46	1.13	1.13	1.18	1.26	1.46
Asphaltic concrete	ton	6.141	6.438	7.798	6.665	6.757	6.51	5.38	6.22	6.28	6.49	7.47
Cem conc pavement	sy	1.800	2.572	3.048	4.528	3.993	4.05	4.05	4.05	4.05	5.00	4.05
Concrete, Cl A	cy	24.481	47.196	57.248	63.706	60.371	61.79	57.18	57.68	57.37	57.21	56.40
Steel, reinforcing	lb	0.051	0.070	0.102	0.123	0.136	0.125	0.116	0.117	0.118	0.113	0.13
structural	lb	0.078	0.138	0.193	0.266	0.284	0.241	0.255	0.243	0.243	0.235	0.235
Composite Index		100.0	163.0	214.5	214.1	226.4	211.4	189.0	194.6	196.9	195.4	192.8

MISSISSIPPI TO THE ROCKIES

Montana Average Unit Prices, Subindexes & Index

	GRADING & DRAINAGE Exca-vation uncl. $/cy 1	CMP culvert 24-in. $/lf 2	Sub-index (39%)	SURFACE & BASE Top course gr. A $/ton 3	Plant mix asph. 150–200 $/gal 4	Base course, 3" crush. $/ton 5	Plant mix type II $/ton 6	Sub-index (40%)	STRUCTURES Rein. steel $/lb 7	Treated timber $/Mfbm 8	Conc. CL. A $/cy 9	Sub-index (9%)	MISCELLANEOUS Median concrete curb $/lf 10	Wire Fence-CW $/rod 11	Guard Rail Gal. steel or conc post $/lf 12	Sub-index (12%)	Com-posite index (100%)
1950	0.358	6.000	100.0	1.271	0.160	0.856	4.819	100.0	0.146	265.51	62.51	100.0	1.75	6.00	4.22	100.0	100.0
1951	0.358	6.070	100.2	1.325	0.125	1.061	4.960	107.9	0.169	316.48	49.97	94.4	2.73	6.00	4.22	117.4	104.8
1952	0.228	6.880	75.2	1.182	0.141	0.800	4.637	92.9	0.167	313.69	68.07	111.5	2.73	6.00	4.01	115.5	90.4
1953	0.286	5.980	84.2	0.941	0.119	0.700	3.093	75.0	0.158	274.51	61.94	101.9	2.45	6.00	3.12	102.8	84.3
1954	0.211	6.199	68.7	1.010	0.123	0.650	2.588	71.2	0.138	274.66	58.26	94.8	2.27	6.00	2.72	96.0	75.3
1955	0.267	7.057	84.5	1.139	0.131	0.792	2.796	81.9	0.151	298.27	51.72	92.0	2.48	6.00	3.34	105.3	86.6
1956	0.342	7.567	102.6	1.374	0.136	0.929	3.984	98.1	0.174	351.11	59.35	106.1	3.65	6.00	4.20	133.8	104.8
1957	0.273	6.928	84.6	1.154	0.134	0.752	3.223	82.4	0.148	361.96	51.37	94.0	2.73	6.00	3.92	114.8	88.2
1958	0.320	7.174	95.8	1.210	0.119	0.792	3.300	83.6	0.154	329.26	49.23	91.6	2.85	5.67	3.53	112.0	92.5
1959: Av	**0.273**	**7.848**	**88.3**	**1.177**	**0.115**	**0.756**	**3.110**	**80.0**	**0.149**	**338.85**	**61.18**	**102.7**	**2.89**	**6.00**	**3.15**	**110.9**	**89.0**
Q1	0.251	8.185	84.5	1.042	0.130	0.650	3.070	74.7	0.200	329.26	49.23	99.0	2.85	5.67	3.53	112.0	85.3
1960: Q1	0.219	7.203	74.0	1.219	0.121	0.667	2.927	75.7	0.166	329.41	54.31	98.8	2.89	5.07	3.00	104.6	80.6

Montana Indexes shown here are revised to a 1950=100 base, with additional items and some changes in weighting from previously reported data to reflect the present importance of bid items in highway construction costs. *1 78% of subindex *2 22% of subindex *3 13% of subindex *4 18% of subindex *5 44% of subindex *6 25% of subindex *7 28% of subindex *8 13% of subindex *9 61% of subindex *10 31% of subindex *11 32% of subindex *12 37% of subindex

Suddenly—after 60 Years

. . . there's a *completely different* way to mix concrete — a new machine whose advantages are so numerous that the chances are it will make stationary mixers as obsolete as horse collars in a few short years. And, it's so simple that men seeing it for the first time must say, "Now, why didn't I think of that?"

This new type of machine is the Turbine Mixer, manufactured by The T. L. Smith Company of Milwaukee, Wisconsin. Its operation is unique, but not unusual. The bowl is not a drum, but a doughnut-shaped pan, open at the top. A motor mounted in the doughnut's hole sends a series of paddles whirling around in the doughnut's ring at speeds as high as 600 feet-per-minute.

The ingredients for concrete can be dumped into the mixer anywhere around the circumference, instead of through a narrow throat... so charging is incredibly fast. When the mixer is turned on, completely homogeneous mixing is accomplished almost as soon as it is begun: capacity loads of almost every type of concrete are thoroughly mixed in about 30 seconds, and dumped in about 10.

Small wonder, then, that the Turbine Mixer promises a revolution in concrete mixing!

As if this weren't enough, however, the new mixer has an outstanding advantage where most money-conscious people can see it best: price. The Turbine Mixer costs less on every count than any other mixer of equal capacity.

Size-for-size, it costs less to purchase. It is very compact — even the largest size, which can turn out 180 yards of concrete an hour, only comes to a man's chin — so it costs less to install (height costs money in *any* kind of structure). It is vibration-free, so it doesn't need any kind of massive base or frame to hold it in place.

It costs less to erect a new mixing plant with a Turbine than with any other kind of mixer — and it costs less to replace an old mixer, too. And if it *is* used to replace an old mixer, the Turbine will not only fit easily into the space, but will substantially increase the plant's capacity.

The Turbine Mixer also possesses a versatility not previously possible in concrete mixing. It can be used to mix *every* kind of concrete, from the earth-moist type used in block making, through the 1-inch slump requirements common in today's inspection-type concrete, to 6-inch slump, and even slurry and grout.

This versatility becomes doubly important since the Turbine can be equipped with four separate discharge doors to discharge in four different directions. Thus a single unit can conceivably serve as a ready-mix plant, feed a gob-hopper for blockmaking, charge pipe machines, and supply a pre-stress yard — all from one location.

In Ready-Mix, the Turbine is opening up the proposition of central-mix to many operators who just couldn't afford it in the past since the Turbine can frequently be installed in existing plants without structural alterations.

On paving spreads, the Turbine Mixer is light enough to be easily portable, yet sturdy enough to stay in constant service feeding a fleet of truck mixers or agitators.

On job-site locations, such as missile bases, the Turbine is inexpensive, easy to install, easy to operate, and can be readily transported to a new location when the job is finished.

As the use of concrete increases, so, we predict, will the use of Turbine Mixers. Just as the Model T spelled doom to America's harness-makers, so will the Turbine replace other stationary mixers.

Advertisement

MISSISSIPPI TO THE ROCKIES

South Dakota Unit Prices & Index

	Roadway excav. $/cy	Cr. grav. surf. $/t	Liquid asph. $/gal	Plant mix bit. surf. $/t	Conc. Cl A $/cy	Reinf. steel $/lb	Struct. steel $/lb	Composite Index '40=100
1940	$0.120	$0.59	$0.078	$1.49	$19.11	$0.044	$0.050	100.0
1946	0.214	1.13	0.101	2.91	38.49	0.085	0.095	177.6
1949	0.197	1.40	0.159	3.83	54.01	0.125	0.135	217.0
1955	0.179	1.01	0.129	2.48	49.09	0.122	0.163	177.0
1956	0.208	1.16	0.124	3.27	52.79	0.136	0.176	198.8
1957	0.222	1.02	0.152	3.04	49.99	0.131	0.182	205.6
1958	**0.226**	**1.90**	**0.104**	**3.20**	**52.06**	**0.124**	**0.179**	**184.5**
Q 1	0.188	....	0.120	3.97	57.44	0.120	0.177	179.6
Q 2	0.180	1.90	0.114	2.76	47.53	0.123	0.158	177.1
Q 3	0.228	....	0.110	4.25	52.06	0.130	0.180	175.9
Q 4	0.260	....	0.104	3.20	52.06	0.124	0.179	209.8
1959 Av.	0.205	1.09	0.126	3.26	50.14	0.128	0.176	200.7
Q 1	0.283	0.95	0.087	2.44	49.21	0.134	0.189	216.9
Q 2	0.185	1.25	0.129	3.22	50.50	0.130	0.183	194.1
Q 3	0.220	1.10	0.142	3.85	51.78	0.129	0.170	215.5
Q 4	0.171	1.19	0.173	3.65	49.45	0.121	0.165	191.2
1960: Q 1	0.168	0.65 a	0.111	3.50	51.22	0.122	0.434 b	208.2

*a Cost of Crushed Gravel Surfacing was not used in computing the Composite Index this quarter. *b Compared to the Fourth quarter price of 1959, this increase is contributed to the small quantities of structural steel required in 1 prestressed conc. beam bridge and 5 conc. slab bridges, resulting in a higher average unit price per pound.

Wyoming Average Unit Prices & Index

(Weight) Year	Excav common (39%) $/cy	Grav base * (29%) $/cy	Oil (9%) $/gal	Conc CIA (11%) $/cy	Struct steel (6%) $/lb	Timber treated piling (6%) $/lf	Comp. Index 40=100
1940	$0.125	$0.670	$0.067	$18.15	$0.067	$1.25	100
1946	0.250	1.263	0.093	33.61	0.108	2.105	186
1949	0.199	0.780	0.124	48.00	0.145	2.512	167
1955	0.243	1.152†	0.096#	62.446	0.177	3.545	210
1956	0.293	1.404	0.120	65.014	0.251	3.182	245
1957	0.286	1.297	0.126	60.105	0.237	3.717	238
1958	0.257	1.116	0.094	60.287	0.191	2.969	209
1959	0.236	1.214	0.113	65.518	0.182	2.879	211

* Surfacing and haul † Crushed Gravel Base Course (1" Max), type most used # Asphaltic Material AC (85–100), type most used

Kansas Highway Cost Indexes

Year	Grading, culverts	Concrete pavement	Aggr. base course	Bit. constr types	Light type surfacing	Bridges Concrete	Bridges Steel
1940	100	100	100	100	100	100	100
1946	168	134	153	152	129	212	142
1950	159	193	117	158	113	282	262
1955	199	242	169	205	153	348	320
1956	188	249	159	198	122	338	336
1957	196	241	167	169	144	372	368
1958	209	255	165	174	143	372	363
1959	233	254	158	175	169	360	318

Nebraska Unit Prices & Index

Year (Weight)	Excavation (18%) $/cu. yd.	Culvert concrete (5%) $/cu. yd.	24" Culvert pipe (2%) $/lin. ft.	Class "A" gravel surface (20%) $/cu.yd.	PCC pavement (15%) $/sq.yd.	Asphaltic oil (15%) $/gal.	Bridge concrete (9%) $/cu.yd.	Structural steel (16%) $/lb.	Composite Index 1937–41 =100
1937	$0.157	$15.80	$2.01	$1.09	$1.93	$0.081	$19.51	$0.055	106.2
1940	0.097	13.49	1.92	1.02	2.08	0.077	17.64	0.049	93.2
1946	0.184	35.95	2.78	1.80	2.60	0.099	42.64	0.094	162.4
1949	0.202	43.53	4.15	1.97	3.53	0.142	54.03	0.144	207.1
1955	0.168	45.95	4.68	2.08	3.59	0.143	51.92	0.166	212.2
1956	0.187	44.76	5.05	2.21	3.57	0.155	58.06	0.231	241.1
1957	0.191	43.17	5.19	2.31	3.44	0.163	52.34	0.219	237.7
1958	0.207	44.71	5.23	2.39	3.90	0.158	51.04	0.170	229.8
1959	0.193	41.37	5.28	2.34	3.97	0.159	49.64	0.164	224.2

MIDDLE WEST

Wisconsin Average Unit Prices & Index

Bid Item	Unit	Quantity Weight*	Average Unit Price 1955	1956	1957	1958	1959
Grading, Uncl	cy	12,000,000	$0.41	$0.42	$0.36	$0.35	$0.337
" Rock	cy	600,000	0.81	0.96	0.64	0.85	1.58
" Common	cy	1,500,000	0.56	0.41	0.32	0.29	0.35
" Borrow	cy	5,300,000	0.51	0.51	0.47	0.43	0.407
" Marsh	cy	1,250,000	0.28	0.36	0.28	0.26	0.23
Ballast	cy	2,350,000	0.82	0.76	0.57	0.60	0.60
Base	cy	5,290,000	1.42	1.81	1.55	1.55	1.684
Bridges	ea	150	54,463	64,039	62,750	51,175	54,430
Bituminous conc	t	809,000	5.78	6.73	6.23	6.52	5.75
" surf	t	403,000	5.35	6.37	5.81	6.42	5.42
Port cem conc 9"	sy	1,690,000	3.42	3.67	3.35	3.32	3.55
Cost Aggregate (in $Millions)			39.519	44.565	40.020	38.508	39.272
Composite Index, 1955=100**			100.0	112.8	101.3	97.4	99.4

** Average quantity used per year 1955–58 *** Computed by ENR on basis of total Cost Aggregate *# Sum of quantity weight times average unit price for each item.

Illinois Indexes

Year	Grading (14%)	Surfacing (58%)	Structures (28%)	Composite 1937–41 =100
1919	186	117	124	129
1926	110	116	92	108
1932	63	75	57	68
1939	108	104	92	101
1946	193	122	159	142
1949	141	139	219	162
1956	163	145	313	195
1957	207	155	353	218
1958	159	154	300	196
1959	180	160	285	198

Indiana Unit Prices

Item	Unit	Average Price 1959	1958
Excavation, common (a)	cy	$0.55	$0.59
Excavation, Special borrow (b)	cy	0.72	0.68
Reinf conc pavement, 10-in	sy	5.34	5.39
Asph conc, hot, binder	ton	7.23	7.28
surf, type B	ton	7.40	7.40
Subbase, type I or II	cy	2.36	2.30
Composite Cost Index, 1953=100		....	101.1

(a) over 100 Mcy
(b) over 50 Mcy
(c) 9-in.

Michigan Indexes, Cost per Mile & Average Unit Prices

Item	Unit	1959	1958
Cost Indexes, 1940=100:			
Composite Mile		163.5	171.1
Surfacing, concrete		172.3	176.0
Grading, drainage		158.4	172.0
Surfacing, Bituminous		139.1	146.0
COST PER MILE:			
Grading & drainage structures, 22-ft pavement (non-interstate)		$114,200	$117,000
Dual concrete 22-ft pavement (non-IS)		207,400	213,000
25-Ft. Aggregate base course with prime and double seal		59,200	64,200
Bituminous concrete surfacing (estimating 250–300 lb/sy, 22-ft width)		21,000	22,000
AVERAGE UNIT PRICES:			
Clearing	ac	197.20	175.00
Grubbing (per sq rod)	sr	1.05	1.10
Tree removal, 37-in and up	ea	102.55	120.60
25 to 36-in	ea	60.83	64.50
13 to 24-in	ea	35.87	38.25
8 to 12-in	ea	20.43	20.50
Excavation, earth	cy	0.30	0.30
rock	cy	2.63	1.55
trenching	cy	0.60	0.49
Concrete pavement	sy	4.10	4.00
Selected subbase	t	1.60	1.65
Pavement reinforcing	sy	0.65	0.66
Steel, reinforcing	lb	0.12	0.11
Concrete, Grade A	cy	56.18	53.00
Bituminous course, concrete wearing	t	8.63	8.80
binder	t	8.82	8.00
Culvert, Class B, 60-in	lf	26.25	25.20
36-in	lf	11.92	12.30
24-in	lf	6.87	7.05
Maintaining traffic	mi	204.86	200.00

Colorado Average Unit Prices & Index

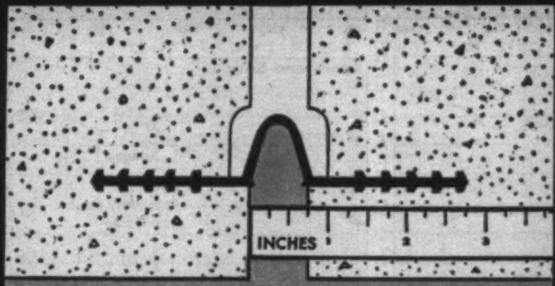
Item	Unit	Quantity	Unit Price 1949	1957	1958	1st Q 1959	2nd Q 1959	3rd Q 1959	4th Q 1959	1959	1st Q 1960
Excavation, unclass	cy	10,630	$0.441	$0.350	$0.344	$0.391	$0.287	$0.321	$0.295	$0.325	$0.277
Overhaul	stay	64,112	0.014	0.009	0.008	0.007	0.006	0.007	0.007	0.007	0.007
	ydmi	6,055	0.122	0.104	0.095	0.091	0.077	0.097	0.081	0.083	0.091
	tnmi	12,188	0.091	0.072	0.066	0.064	0.073	0.073	0.077	0.070	0.058
Sub-base	t	2,998*	0.521	0.471	0.524	0.482	0.606	0.438	0.590	0.535	0.399
Gravel, or rock surf	t	1,976	0.894	0.991	1.082	0.954	0.965	0.875	0.932	0.934	0.993
Asphalt, liquid	gal	10,252	0.151	0.186	0.168	0.177	0.186	0.174	0.173	0.178	0.177
Asph surf, plant mix	t	279	4.500	3.144	3.249	3.338	2.885	2.557	3.028	2.964	2.835
Concrete pavement	sy	449	3.512	3.578	3.728	3.831	4.443	3.270	3.824	3.835	3.853
Concrete	cy	36	48.564	56.453	1.601	51.739	47.392	49.241	50.998	49.774	54.088
Steel, struct	lb	7,114	0.133	0.205	0.186	0.183	0.171	0.198	0.194	0.180	0.181
Culvert, CMP	lf	109#	5.823	8.423	9.251	9.785	8.560	8.930	9.213	9.136	8.120
Composite Mile Index	...	.....	100.0	97.3	96.1	97.2	92.5	89.3	93.0	92.9	88.1

* incl all matl whether bid as sub-base or select borrow # aver of all diam pipe used

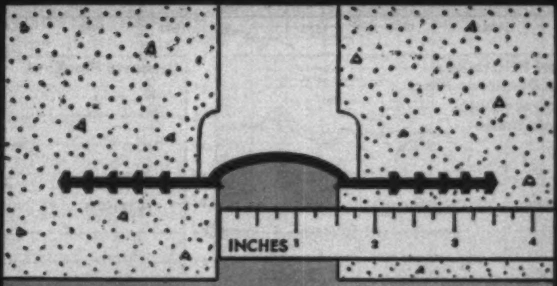
NOW . . . A WATERSTOP DESIGNED TO HANDLE ELONGATION CORRECTLY . . . WITHOUT STRESSING THE MATERIAL OR MULTIPLE-RIB AREA!

SEALTIGHT®

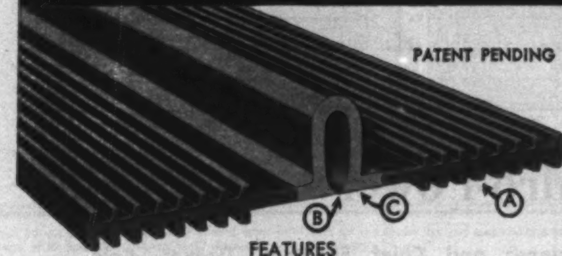
DUO-PVC Waterstops



Notice how the U-Bulb design permits the waterstop to mechanically expand without stretching the material or stressing the multiple-rib area. The DUO-PVC material maintains correct thickness and the ribs remain firmly embedded in the concrete to stop water.



During tests conducted at the University of Detroit the joint was opened 1½" and the DUO-PVC waterstop was subjected to a 100 foot head of water . . . *no leakage occurred* . . . also a 215 foot head of water was applied . . . again *no leakage occurred*. Tests also proved tremendous advantage of the exclusive Sealtight rib design. Copies of test results avaliable on request.



FEATURES

- Ⓐ Exclusive rib design offers greater holding power, strength and rigidity. The rigid ribs will not compress, shear-off or pull-out.
- Ⓑ Exclusive thin membrane prevents infiltration of concrete during pouring . . . designed to tear under expansion and allow U-bulb to accommodate extreme expansion.
- Ⓒ Exclusive U-bulb design mechanically expands 1½" without stretching material or stressing rib area . . . when greater expansion occurs the DUO-PVC material will then accommodate it safely.

. . . the first waterstop designed to accommodate expansion without impairing the basic function of the waterstop!

Sealtight DUO-PVC Waterstops are simultaneously extruded from two top-quality PVC compounds. The PVC utilized in the center area is compounded to combine strength with maximum flexibility, whereas, the multiple-rib area is extruded from a PVC compound that offers great strength with a desirable rigidity. This new concept of waterstop design permits DUO-PVC Waterstops to effectively function as a waterstop while safely accommodating expansion movements heretofore thought impossible. Mail the coupon below for complete information.

Another important technical advancement from the Research and Development Department of W. R. Meadows, Inc.

SEALTIGHT®

PRODUCTS
FOR BETTER
CONSTRUCTION

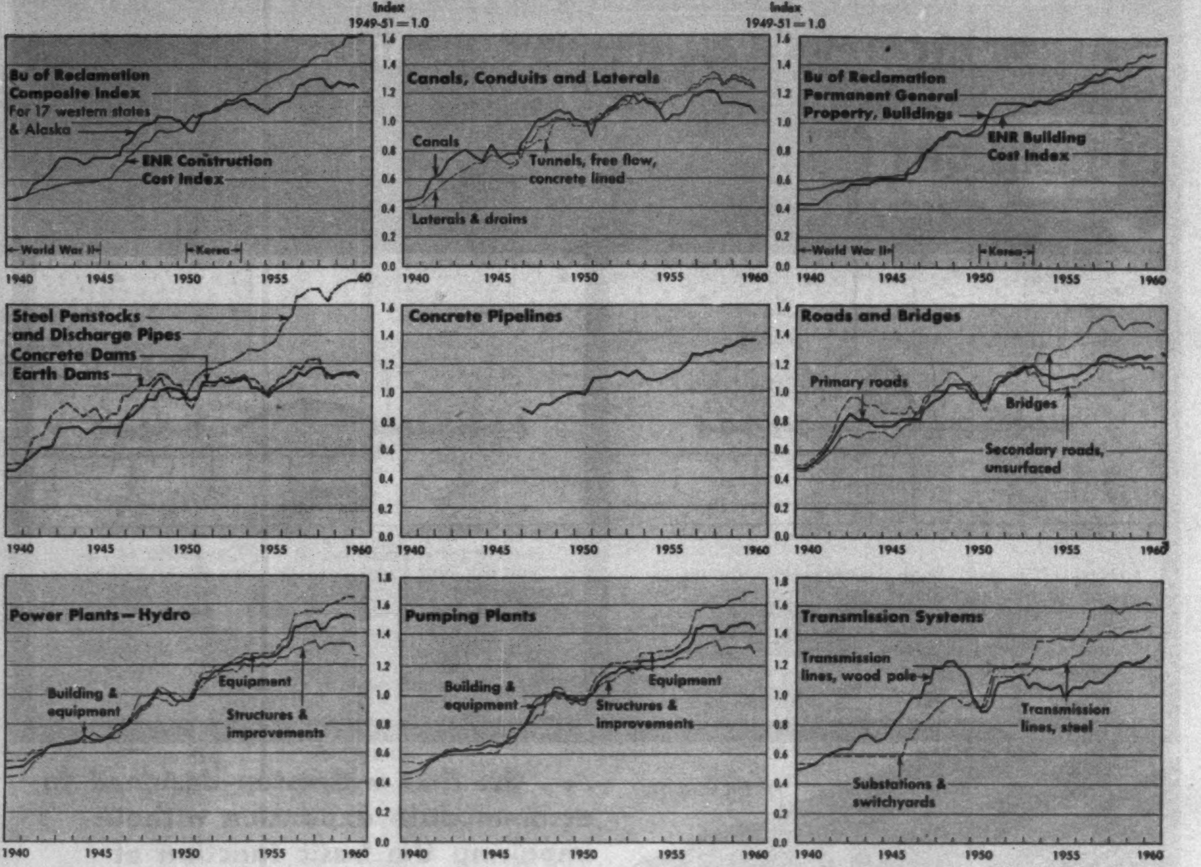
W. R. MEADOWS, INC.
16 KIMBALL ST. • ELGIN, ILLINOIS

Please send without obligation information on the new Sealtight DUO-PVC Waterstops.

Name______________________________
Address____________________________
City________________Zone_____State________

Irrigation & Hydro Cost Indexes

Less



Irrigation and Hydro-Power Construction

US Bureau of Reclamation, Office of Assistant Commissioner and Chief Engineer, Denver, Colo.

Class of Construction	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	
	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Jan.	Apr.
Composite index	0.47	0.49	0.61	0.75	0.75	0.76	0.76	0.86	0.99	1.04	1.02	1.01	1.10	1.13	1.13	1.07	1.15	1.24	1.27
Dams, earth	0.50	0.52	0.70	0.88	0.87	0.89	0.85	0.98	1.05	1.12	1.05	0.98	1.05	1.09	1.09	0.98	1.07	1.15	1.19
Dam structure	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Spillway	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Outlet works	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dams, concrete	0.47	0.52	0.62	0.76	0.76	0.76	0.76	0.83	0.95	1.00	1.02	1.02	1.07	1.07	1.04	0.97	1.04	1.11	1.14
Dams, diversion	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pumping plants, bldg & equip	0.48	0.50	0.58	0.63	0.64	0.67	0.69	0.80	0.95	1.02	0.97	1.04	1.16	1.18	1.24	1.25	1.31	1.43	1.45
struct, reinf conc, & improv	0.43	0.46	0.57	0.64	0.66	0.70	0.68	0.80	1.00	1.06	0.98	1.02	1.10	1.17	1.18	1.19	1.24	1.31	1.32
equipment	0.55	0.54	0.58	0.60	0.60	0.61	0.70	0.78	0.87	0.98	0.97	1.10	1.22	1.23	1.29	1.30	1.38	1.56	1.58
pumps & prime equip	....	....	....	....	....	....	....	....	....	0.94	0.97	1.08	1.22	1.28	1.34	1.35	1.44	1.64	1.66
access elec & misc equip	....	....	....	....	....	....	....	....	....	1.05	0.97	1.10	1.18	1.12	1.19	1.20	1.25	1.41	1.43
steel penstocks, disch pipes	....	....	....	....	....	....	....	0.82	0.92	1.10	0.94	1.08	1.17	1.21	1.30	1.32	1.47	1.66	1.68
Canals	0.46	0.49	0.64	0.78	0.77	0.85	0.78	0.89	1.02	1.08	1.01	1.00	1.11	1.18	1.13	1.00	1.06	1.18	1.20
Earthwork	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Structures	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Conduits (tunnels)	....	....	....	....	....	....	0.68	0.82	0.88	1.02	0.97	1.02	1.08	1.13	1.16	1.14	1.17	1.24	1.26
Laterals and drains	0.41	0.45	0.56	0.64	0.71	0.77	0.70	0.86	0.97	1.02	1.00	1.01	1.10	1.14	1.14	1.15	1.18	1.26	1.31
Earthwork	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Structures	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Primary roads	0.48	0.53	0.67	0.86	0.82	0.77	0.82	0.82	0.96	1.06	1.01	0.99	1.11	1.18	1.13	1.11	1.12	1.19	1.23
Secondary roads, unsurfaced	0.50	0.55	0.71	0.96	0.91	0.86	0.86	0.88	1.04	1.14	1.04	0.96	1.14	1.19	1.05	1.03	1.04	1.13	1.18
Bridges, steel	0.46	0.50	0.60	0.71	0.73	0.73	0.76	0.87	1.01	1.06	0.96	1.01	1.12	1.19	1.27	1.30	1.36	1.47	1.48
Power plants, hydro, bldg & equip	0.50	0.52	0.60	0.66	0.68	0.70	0.71	0.80	0.93	1.01	0.96	1.06	1.16	1.21	1.24	1.25	1.31	1.44	1.46
struct, reinf conc, & improv	0.44	0.46	0.58	0.67	0.69	0.74	0.70	0.82	0.99	1.05	0.99	1.03	1.12	1.17	1.19	1.19	1.24	1.30	1.31
equipment	0.55	0.55	0.62	0.66	0.68	0.67	0.73	0.79	0.90	0.96	0.96	1.09	1.20	1.23	1.28	1.28	1.36	1.53	1.55
turbines & generators	0.56	0.56	0.64	0.68	0.70	0.69	0.76	0.81	0.89	0.97	0.97	1.08	1.22	1.27	1.31	1.31	1.39	1.57	1.58
access elec equip	0.54	0.55	0.55	0.58	0.58	0.59	0.65	0.74	0.99	1.01	0.92	1.14	1.20	1.15	1.22	1.24	1.29	1.44	1.46
misc equip	0.51	0.53	0.58	0.65	0.68	0.70	0.70	0.76	0.89	1.05	0.97	1.08	1.13	1.15	1.17	1.20	1.29	1.43	1.44
Concrete pipe lines	....	....	....	....	....	....	....	0.88	0.92	0.96	0.99	1.09	1.11	1.11	1.10	1.32	1.47	1.66	1.68
Switchyards & substa	0.54	0.54	0.59	0.59	0.59	0.59	0.59	0.81	0.92	0.99	0.97	1.11	1.19	1.22	1.37	1.39	1.41	1.59	1.60
Transm lines, wood pole 115 kv	0.50	0.54	0.62	0.64	0.74	0.72	0.89	0.99	1.19	1.24	0.99	0.94	1.11	1.11	1.06	1.08	1.06	1.09	1.09
Poles and fixtures	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Overhead conductors & devices	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Steel tower 230 kv	....	....	....	....	....	....	....	....	....	....	....	1.02	1.13	1.14	1.18	1.20	1.28	1.37	1.39
Permanent genl property bldgs	0.44	0.44	0.53	0.58	0.58	0.62	0.62	0.75	0.91	0.95	0.93	1.11	1.15	1.14	1.15	1.18	1.25	1.30	1.30

Work ÷ More Bidders = Lower Prices

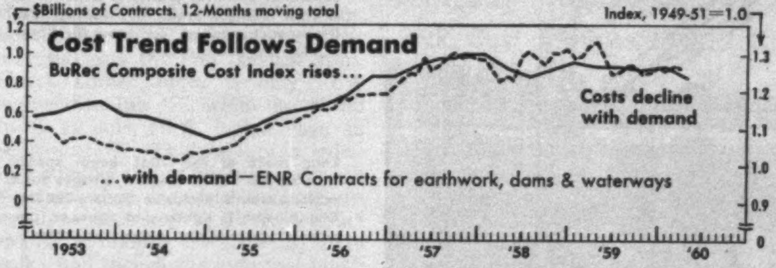
Irrigation and hydro-power construction costs dropped in April, canceling out January's slight increase. The U.S. Bureau of Reclamation Composite Cost Index fell to its lowest since July '58 and was 4.6% under its October '57-January '58 record. Moreover, April was no higher than October '56.

Yet April costs of construction materials, labor, equipment and working capital were much higher than in late '56 or early '58:

- The ENR Construction Cost Index was 15.6% higher than October '56 and 9.4% above January '58.
- List prices of construction equipment were 12.9% greater than October '56 and 5.6% above January '58 (U.S. Bureau of Labor Statistics Index).
- Average interest rates on bank loans in March were 22.8% greater than September '56 and 10.1% above December '57, according to quarterly Federal Reserve Board data for banks in 19 cities.

Stiff competition is forcing irrigation and hydro construction prices down. Average number of bidders per BuRec project hit a 10-year high of 8.2 in 1959—the preceding 10-year average was 6.3 bids per job. Moreover, demand has declined for types of work that BuRec buys, as measured by ENR contracts for earthwork-dams-waterways (chart below). So contractors are trimming their bids to compete more successfully for the reduced amount of new work available. Though BuRec's cost indexes are based on projects constructed in 17 western states and Alaska, many contractors bidding BuRec jobs operate country-wide.

The chart at right shows how low bids for six of seven earth dams let by the bureau in 1959 were more than 10% under the estimate; three were more than 20% under. Low bids for canals and lateral structures dropped further below estimates in '59 than '58. BuRec's cost indexes reflect this stiff competition. Moreover, this year's cost indexes are also dropping for concrete dams, pumping plants and power plants.

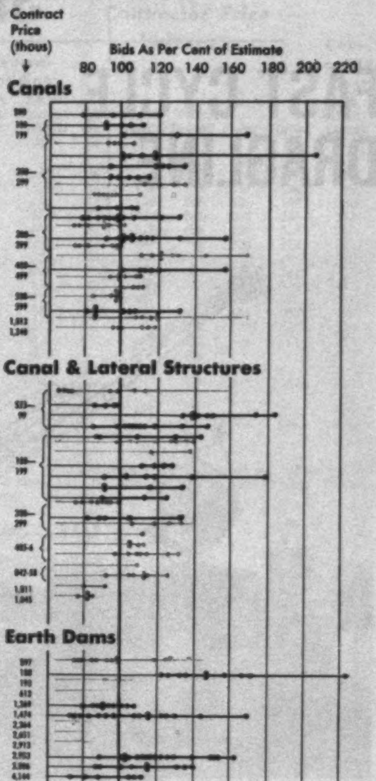


Cost Indexes—1949-51=1.0

Based on combined costs of material and labor furnished by the contractor and material and labor furnished by the government on Bureau of Reclamation projects in 17 western states and Alaska

	1957		1958				1959				1960	
Class of Construction	July	Oct.	Jan.	Apr.	July	Oct.	Jan.	Apr.	July	Oct.	Jan.	Apr.
Composite index	1.29	1.30	1.30	1.26	1.24	1.26	1.28	1.27	1.27	1.26	1.27	1.24
Dams, earth	1.22	1.22	1.23	1.17	1.10	1.10	1.12	1.12	1.12	1.12	1.13	1.10
Dam structure	....	....	....	....	....	....	0.99	0.99	0.99	0.99	0.99	0.95
Spillway	....	....	....	....	....	....	1.27	1.27	1.27	1.26	1.28	1.25
Outlet works	....	....	....	....	....	....	1.34	1.34	1.35	1.34	1.36	1.35
Dams, concrete	1.15	1.16	1.16	1.14	1.12	1.12	1.13	1.13	1.13	1.13	1.14	1.12
Dams, diversion	....	....	....	....	....	....	1.37	1.39	1.37	1.39	1.39	1.39
Pumping plants, bldg & equip	1.46	1.46	1.46	1.41	1.42	1.46	1.47	1.47	1.48	1.48	1.48	1.44
struct, reinf conc. & improv	1.34	1.35	1.36	1.30	1.32	1.33	1.33	1.33	1.33	1.33	1.33	1.29
equipment	1.58	1.58	1.58	1.59	1.60	1.63	1.65	1.66	1.67	1.70	1.70	1.70
pumps & prime equip	1.66	1.66	1.66	1.67	1.68	1.71	1.73	1.75	1.76	1.78	1.78	1.78
access elec & misc equip	1.44	1.44	1.44	1.44	1.45	1.49	1.50	1.50	1.51	1.54	1.55	1.55
steel penstocks, disch pipes	1.72	1.72	1.72	1.66	1.63	1.69	1.72	1.74	1.75	1.77	1.77	1.77
Canals	1.21	1.21	1.19	1.12	1.13	1.13	1.13	1.12	1.12	1.11	1.11	1.06
Earthwork	....	....	....	....	....	....	1.09	1.06	1.06	1.06	1.06	1.01
Structures	....	....	....	....	....	....	1.24	1.19	1.14	1.16	1.16	1.12
Conduits (tunnels)	1.29	1.30	1.30	1.25	1.28	1.29	1.29	1.28	1.28	1.26	1.26	1.24
Laterals and drains	1.32	1.35	1.32	1.26	1.27	1.30	1.32	1.30	1.30	1.28	1.28	1.23
Earthwork	....	....	....	....	....	....	1.11	1.05	1.05	1.00	0.97	0.92
Structures	....	....	....	....	....	....	1.59	1.52	1.50	1.46	1.46	1.41
Primary roads	1.25	1.25	1.24	1.22	1.21	1.23	1.24	1.25	1.25	1.24	1.25	1.25
Secondary roads, unsurfaced	1.21	1.20	1.19	1.18	1.18	1.19	1.19	1.20	1.20	1.17	1.18	1.17
Bridges, steel	1.52	1.52	1.52	1.46	1.44	1.47	1.48	1.48	1.48	1.48	1.48	1.46
Power plants, hydro, bldg & equip	1.47	1.47	1.48	1.42	1.44	1.49	1.51	1.51	1.52	1.52	1.52	1.50
struct, reinf conc, & improv	1.33	1.34	1.36	1.30	1.33	1.34	1.34	1.34	1.34	1.34	1.34	1.29
equipment	1.55	1.55	1.54	1.55	1.58	1.60	1.61	1.62	1.63	1.65	1.65	1.65
turbines & generators	1.58	1.58	1.58	1.59	1.60	1.62	1.64	1.66	1.67	1.68	1.68	1.68
access elec equip	1.48	1.48	1.48	1.48	1.49	1.52	1.52	1.52	1.53	1.56	1.56	1.56
misc equip	1.44	1.44	1.40	1.40	1.40	1.44	1.44	1.45	1.46	1.48	1.49	1.49
Concrete pipe lines	1.72	1.72	1.29	1.28	1.32	1.32	1.33	1.35	1.36	1.36	1.36	1.36
Switchyards & substs	1.60	1.61	1.60	1.58	1.56	1.60	1.61	1.62	1.63	1.64	1.65	1.63
Transm lines, wood pole 115 kv	1.10	1.13	1.16	1.18	1.21	1.23	1.23	1.21	1.23	1.23	1.25	1.28
Poles and fixtures	....	....	....	....	....	....	1.10	1.13	1.16	1.09	1.12	1.13
Overhead conductors & devices	....	....	....	....	....	....	1.34	1.34	1.34	1.34	1.35	1.39
Steel tower 230 kv	1.43	1.43	1.43	1.42	1.40	1.43	1.44	1.44	1.45	1.46	1.46	1.48
Permanent genl property, bldgs	1.31	1.31	1.30	1.30	1.32	1.34	1.35	1.36	1.38	1.40	1.40	1.40

How Bids Compare With Cost Estimates 1959 vs 1958



RUGGED ROCK SHOVEL

FAST CYCLE DRAGLINE

Stripping a hill of rock, the "85-A" shovel combines powerful crowding action with smooth swings, loads out trucks fast. Dipper stick made of "T-1" steel. Air dipper trip for fast dump cycles.

Long reach of this 70-ft. boom speeds work as this "85-A" dragline dredges out a pond. Lorain's exclusive Square-Tubular-Chord boom is lighter and stronger, provides longer reaches, bigger capacities.

CONVERTIBILITY MEANS WORKABILITY WITH A LORAIN 85-A

Many rigs are convertible in name only. When it comes to on-the-job performance they show up as one-purpose machines.

Not the 2½-yard Lorain 85-A. It converts so easily that field changes are a breeze. On the job, it has the power and control to pay off on all kinds of work. Everything from tough shovel and hoe digging to dragline, clamshell or crane operations.

The "85-A" gets its versatility from its design. There are three power shafts for simultaneous hoist, swing and travel . . . two-lever "Joy-Stick" air power controls that blend operations for faster shovel-crane cycles. There's warranted "Shear-Ball" connection for rock steady swings, minimum maintenance . . . and a two-speed crawler with independent travel and air ease controls. Plus many others.

If you are looking for a heavy-duty rig that will boost your output and widen your workability, ask your Lorain distributor about the 85-A.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN® ON THE MOVE

PLANTS: In Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS:** Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ⅜- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 6000-lb. and 7000-lb. carrying capacity . . . **OUTLETS:** Lorain products sold and serviced by 249 distributor outlets throughout the world.

2nd Quarterly Cost Roundup

Building Cost & Price Indexes

Wages Push Costs, Prices Up

Building contractors selling price indexes are either steady or moving up. The outlook is for those that haven't increased to do so as this year's crop of wage increases goes into effect.

Helping to hold down this year's prospective increase in selling prices are stable materials prices, ready availability of materials and the lower volume of demand for new building construction in the first half of 1960 compared with 1959. Because of the lagging volume of available new work, competition among building contractors is squeezing their prices and pressuring them to push for still greater efficiency.

Two industrial building price indexes have been notably steady this year. The Turner Building Cost Index for April remained unchanged for the fourth consecutive quarter. The Austin Building Cost Index for March was unchanged from its December '59 value. Both indexes have increased very little over the past two and one-half years. Latest Turner Index is only 1.6% higher than July '57, while the Austin Index is only 1.7% higher than in September '57. This stability in industrial building selling prices has come in a period when industrial building demand, as measured by ENR contract awards, is running far below its 1956 peak. And though the industrial building market is renewing the recovery which stalled because of last year's steel strike, the demand for new plants is unlikely to rise fast enough to ease the competitive damper on contractors' selling prices.

By contrast, the George A. Fuller Co. Building Cost Index edged up a point in April, while the Fruin-Colnon Industrial Building Cost Index for St. Louis jumped sharply in March. Latest values of these two indexes were up 1.6% and 4%, respectively, in only six months and they were 9% to 13% higher than in the summer of 1957.

The Fuller and Fruin-Colnon indexes thus differ sharply from the trend in the Turner and Austin indexes. The two former indexes are following more closely the trend in basic costs of materials and labor as measured by ENR's Building Cost Index. The Fuller Building Cost Index is based on price movements of all materials and labor needed to construct four typical buildings: two commercial, one industrial and one purely monumental. The Fruin-Colnon Contracting Co. reprices for its index five industrial buildings in St. Louis on the basis of contractors' actual and estimated material and labor costs.

(For full details on what these indexes measure and how they are computed, see ENR Mar. 24, p. 87.)

Two weighted cost indexes designed to approximate contractor selling price indexes showed a little weakness this year. The Smith Hinchman & Grylls Building Cost Index dipped in May below its April record. This was the first turndown in the Detroit architect-engineer firm's index since 1958.

The E. H. Boeckh index for commercial and industrial building eased off slightly in March, steadied in April, but then bounced up to a new high in May. The Boeckh index had also dipped in early '58, when the recession in new building business was hurting contractors, needling some into raising efficiency and cutting profit margins.

Building Cost Trends by Type—1913 = 100

	Weighted Cost Indexes							Contractor Price Indexes					Composite Cost
	General Construction		Industrial		Comm'l & Factory	General Building							
Yr. & Month	ENR Constr. Cost	Assoc. Gen. Contr.	American Appraisal Co.	Marshall & Stevens	E. H. Boeckh cd	ENR Bldg. Cost	Smith Hinchman & Grylls ag	Aberthaw bc	Austin g	Fruin. Colnon	Fuller	Turner h	U.S. Dept. Comm. d
1913	100	100	100	100	100	100	...	...	100	100	100	100	...
1926	208	197	217	185	181	185	185	197	185	218	202	195	179
1932	157	171	155	130	144	141	128	168	117	178	157	136	140
1939	236	188	200	183	191	197	199	190	152	208	195	182	180
1945	308	231	271	248	252	239	285	236	234	247	241	258	235
1946	346	257	322	288	275	262	319	279	273	285	290	318	269
1949	477	342	490	365	369	352	395	312	307	382	382	413	363
1955	660	439	608	479	465	469	522	398	366	483	462	498	440
1956	692	462	635	503	489	491	544	427	400	503	482	544	465
1957	724	483	663	515	507	509	568	453	420	512	504	576	482
1958	759	499	682	528	517	525	565	453	427	530	526	576	486
1959	**797**	**517**	**704**	**544**	**535**	**548**	**575**	**473**	**429**	**551**	**545**	**587**	**498**
Oct	811	526	712	...	540	555	583	...	...	556	549	589	500
Nov	810	526	713	...	540	554	585	...	...	556	...	...	504
Dec	809	526	714	552	542	553	586	479	431	556	...	...	507
1960													
Jan	812	527	714	...	542	554	590	...	...	556	556	589	500
Feb	813	527	715	...	545	555	590	...	...	556	...	...	504
Mar	813	529	716	552	544	555	590	...	431	578	...	...	504
Apr	813	529	...	...	544	555	590	...	...	578	557	589	504p
May	819	530	...	...	546	558	588	...	...	578	...	...	...
Jun	826	...	...	...	...	560	...	...	...	...	...	...	...

*a Incl adjustment for estimated changes in productivity *b 1914=100 *c Incl contractor overhead, profit and adjustment for estimated changes in productivity *d 1915=100 *e Semi-annual since Sep. '56 *f Computed on 1926-29 base *g Computed on 1926 base *h Computed on 1939 base *p Preliminary

ENR Cost Indexes for 22 Cities—1913=100

Construction Cost Index

	June			1958		1959		1960	
City	'49	'56	'57	Jun	Dec	Jun	Dec	Mar	Jun
Atlanta	345	502	523	558	584	594	623	639	633
Baltimore	425	595	643	701	709	711	745	740	755
Birmingham	389	549	556	593	619	624	652	653	654
Boston	526	744	746	793	807	832	823	833	836
Chicago	526	788	831	838	859	875	918	919	919
Cincinnati	487	680	713	746	777	790	814	815	845
Cleveland	514	809	856	849	880	919	921	920	944
Dallas	398	509	525	553	573	573	604	604	629
Denver	482	670	702	725	731	742	747	758	753
Detroit	489	800	823	852	892	962	942	946	984
Kansas City	501	709	735	762	768	793	798	798	811
Los Angeles	478	733	731	814	824	839	868	870	870
Minneapolis	504	747	781	818	824	855	859	860	890
New Orleans	379	564	572	591	617	620	641	644	650
New York	534	819	852	912	940	978	1008	1011	1008
Philadelphia	492	737	780	795	790	804	791	790	830
Pittsburgh	492	688	762	819	827	840	849	870	870
St. Louis	508	756	789	840	844	891	874	880	900
San Francisco	478	726	758	798	812	824	850	849	885
Seattle	530	720	749	789	790	836	831	859	857
Montreal	408	560	586	603	604	610	630	630	650
Toronto	...	562	611	605	638	671	657	665	697
U. S. Average	**474**	**692**	**721**	**757**	**774**	**790**	**808**	**813**	**826**

Building Cost Index

	June			1958		1959		1960	
City	'49	'56	'57	Jun	Dec	Jun	Dec	Mar	Jun
Atlanta	308	424	442	461	472	477	499	503	498
Baltimore	349	491	503	527	542	544	558	553	557
Birmingham	329	447	457	480	493	498	515	517	518
Boston	362	503	518	528	542	560	554	565	560
Chicago	349	500	511	535	562	578	581	582	585
Cincinnati	356	475	489	502	515	529	539	540	547
Cleveland	332	508	522	515	533	554	554	553	562
Dallas	322	424	439	459	469	474	490	491	519
Denver	351	488	510	525	532	537	545	542	545
Detroit	336	514	535	545	574	599	595	599	605
Kansas City	357	497	503	527	533	548	553	553	562
Los Angeles	339	491	496	514	530	552	554	556	566
Minneapolis	361	515	530	547	553	564	569	570	573
New Orleans	325	457	467	477	494	499	511	514	517
New York	398	556	578	601	600	639	643	647	647
Philadelphia	394	538	560	569	569	583	578	580	583
Pittsburgh	375	500	541	573	595	595	601	609	614
St. Louis	375	522	538	558	563	590	573	579	583
San Francisco	341	476	486	507	533	550	549	553	554
Seattle	328	444	456	470	484	490	500	504	504
Montreal	316	437	451	449	449	450	459	459	466
Toronto	...	450	469	468	479	500	488	498	497
U.S. Average	**349**	**489**	**504**	**521**	**535**	**548**	**553**	**555**	**560**

Monthly Index History

Historical record of ENR Cost Indexes, graphs and tables for all years 1913-60 is in the supplement to Engineering News-Record, *Mar. 24, 1960. Reprints are available at $0.50 each from Business News Department, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.*

MANPOWER: Wages Rise Again by Hefty Amounts

Wage boosts are shoving ENR's 20-Cities Cost Indexes to record highs.

While no clear-cut pattern emerges, over half of the new pacts provide the same or smaller increases than 1959. For example:

Four of nine new common labor contracts provide smaller increases than 1959, three larger and two identical.

Of eight 1960 bricklayers' agreements, four grant greater increases than last year, two smaller and two the same.

By contrast, six of eleven new carpenters' pacts provide smaller 1960 wage boosts, one the same and four greater than last year.

Structural ironworkers put pressure on contractors with strikes in Denver, Kansas City, Detroit and Chicago. But so far only two of six new agreements grant higher 1960 wage boosts. Two provide increases below last year and two the same.

Because most 1960 contracts carry good-sized deferred increases, contractors face additional hefty construction wage boosts in the next two or three years.

Meanwhile, several unions working under long-term contracts have, or will get deferred increases this year, ranging from 5-25 cents for laborers, 10-25 cents for skilled.

Some 1960 increases contrast sharply with '59 increases. Detroit laborers win 10.3¢ in '60 vs 24¢ on building and 32¢ on heavy construction in '59. Baltimore laborers get 7.5¢ this year, half last year's hike. New Orleans bricklayers settle for 5¢ in '60 vs 17.5¢ in '59. Denver ironworkers get 32.5¢ this year against 23.5¢. Baltimore ironworkers win 20.3¢ in '60 vs no raise in 1959.

Wage Increases Negotiated in Major Cities

	COMMON LABOR							SKILLED LABOR										
	Building				Heavy Constr			Bricklayers			Carpenters			Structural Ironworkers				
	'60	'61	'62	'63	'60	'61	'62	'60	'61	'62	'60	'61	'62	'60	'61	'62	'63	'64
Baltimore	7.5	7.5	...	...	7.5	7.5	...	10.0	10.0	...	10.0	12.5	...	20.3	...	...	...	...
Boston	...	...	...	...	...	...	...	...	...	...	10.0	...	...	...	...	...	...	...
Chicago	...	...	...	...	...	...	...	...	...	...	16.0	17.0	...	...	...	...	...	...
Cincinnati	15.0	...	...	...	15.0	...	...	14.5	...	...	...	...	...	15.0	...	...	...	...
Denver	7.0	...	...	...	7.0	...	...	...	...	...	...	...	...	32.5	10.0	10.0	...	...
Detroit	10.3	10.3	...	...	10.3	10.3	...	11.9	12.7	...	12.3	12.0	...	...	...	...	...	...
Kansas City	12.5	12.5	12.5	12.5	...	...	...	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	15.0
Los Angeles	...	...	...	...	...	...	...	20.0	15.0	...	...	...	...	...	...	...	...	...
Minneapolis	15.0	15.0	15.0	...	15.0	15.0	10.0	15.0	15.0	10.0	...	...	...	...	...	...	...	...
New Orleans	7.5	7.5	...	...	...	...	...	5.0	10.0	...	10.0	10.0	...	10.0	10.0	...	...	...
New York	16.2	21.6	32.4	...	16.2	21.6	32.4	16.0	40.0	...	16.2	21.6	32.4	...	...	...	...	...
Pittsburgh	...	...	...	...	12.5	...	...	...	...	...	25.0	...	...	...	...	...	...	...
St. Louis	15.0	20.0	20.0	...	15.0	20.0	20.0	...	...	...	15.0	20.0	20.0	15.0	20.0	20.0	...	...
San Francisco	...	...	...	...	...	...	...	...	...	...	23.5	22.5	...	...	...	...	...	...

MACHINES: Selective Increases Keep Price Averages Rising

List prices of new construction equipment continue to show a creeping inflation this year. April (latest available as we go to press) was the sixth consecutive month in which selective price increases nudged the US Bureau of Labor Statistics index of manufacturers' prices to a new record.

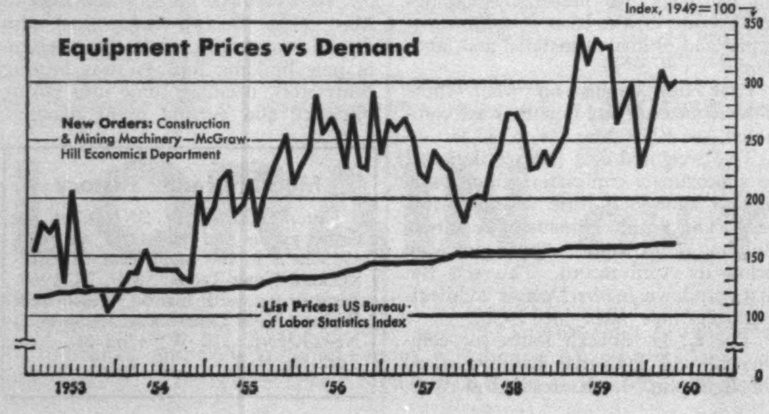
Though the monthly increments have been slight, over a span of several months they add up. The BLS' April 15 index of 174.7, based on average prices of 1947-49 as 100, was 1.2% higher than six months earlier. And was up 1.5% in 12 months.

However, the uptrend is much slower than in recent years.

Major factors in holding down construction equipment prices this year are:

- Steel prices have held steady and no increase is in the cards until next December at the earliest. Steel price hikes had figured into equipment price increases in recent years—until 1959 when steel mills held the line.
- Capacity of the equipment manufacturing industry is so much greater than current demand that sales competition in 1960 is serving as a major deterrent to price hikes.

A couple of equipment makers have announced design changes in their lines which have either upped the capacity per dollar of investment, as in the case of certain Bucyrus-Erie's "Series Two" power crane and shovel models, or permitted a slight price reduction, as in the case of certain off-highway dump trucks made by Mack Truck.



Equipment Price Indexes

Bureau of Labor Statistics,
1947-49=100

	April 15 1960	April 15 1959	Change (Apr. to Apr.) '59-'60 %	Change (Apr. to Apr.) '58-'59 %
All Types of Equipment	174.7	172.0	+1.5	+4.0
Cranes, Draglines, Shovels	172.5	169.2	+1.9	+3.7
Shovel, ½ cy	167.7	157.8	+6.2	+2.7
Shovel, ¾ cy	175.7	172.5	+1.8	+3.0
Shovel, 1-1½ cy	188.6	184.6	+2.1	+5.0
Shovel, 2-2½ cy	166.4	162.1	+2.6	+5.3
Shovel, 3-3½ cy	167.8	167.8	0	+3.1
Shovel, 6 cy	195.0	188.2	+3.6	+4.8
Crane, truck mounted	168.2	169.6	−0.9	+3.3
Crane, tractor mounted	135.1	135.1	0	0
Bucket, clam shell	162.9	157.5	+3.4	+3.1
Bucket, dragline	169.3	169.3	0	−6.4
Scrapers and Graders	166.2	165.7	+0.3	+4.3
Scraper,				
4-wheel, 8-10.5 cy	155.0	155.0	0	0
4-wheel, 12-15 cy	156.8	156.8	0	+3.6
2-wheel, 15-19.5 cy (a)	126.2	123.7	+2.0	+0.8
Grader, heavy duty	173.1	172.6	0	+5.2
Grader, light & medium	171.1	171.1	0	+6.1
Tractors (non-farm)	191.2	187.8	+1.8	+4.0
Wheel-type, off-hwy (a)	129.2	128.2	+0.7	−0.2
Crawler under 49 dhp	195.4	188.8	+3.4	+5.4
50-74 dhp	198.8	191.9	+3.5	+5.1
75-99 dhp	201.2	196.4	+2.4	+5.7
100-154 dhp	194.2	191.3	+1.5	+2.5
155-200 dhp	203.3	201.3	+0.9	+5.0
Machinery, Tractor Mtd	169.2	168.6	+0.3	+4.2
Dozer, cable control	154.4	154.4	0	+1.8
Dozer, hydraulic control	186.6	186.6	0	+5.2
Cable power control unit	152.9	151.4	+0.9	+2.4
Loader, shovel type	162.5	161.5	+0.6	+4.9
Specialized Machinery	157.8	154.5	+2.1	+2.8
Ditcher	150.2	156.6	−4.1	+1.6
Roller, tandem	226.4	206.1	+9.8	+6.7
Roller, 3 wheels	178.7	170.2	+4.9	+5.3
Ripper and rooter	156.6	150.5	+4.0	+5.0
Dewaterg pump, 10 Mgph	111.5	110.0	+1.3	−1.5
Dewaterg pump, 90 Mgph	151.5	148.6	+2.0	+3.0
Portable Air Compressors	167.5	167.5	0	+5.3
Capacity, under 200 cfm	173.2	173.2	0	+5.8
Capacity, over 200 cfm	162.4	162.4	0	+5.0
Contractors Air Tools	181.6	181.6	0	+10.4
Mixers, Pavers, Spreaders	159.7	155.8	+2.5	+4.4
Mixer, portable, 11 cf	166.8	164.1	+1.6	+2.5
Mixer, portable, 16 cf	172.7	168.6	+2.4	+3.0
Mixer, truck, 6 cy	135.1	131.1	+3.0	+2.3
Mixer, paving, 34 cf	196.7	191.6	+2.6	+3.5
Concrete finisher, & spdr	201.9	191.5	+5.4	+10.7
Bituminous distributor	126.2	122.3	+3.1	0
Bituminous spreader	170.2	170.2	0	+6.2
Bituminous paver	163.2	162.6	+0.3	+6.3
Off-Highway Vehicles (b)	101.0	101.1	−0.1	+1.1
truck (b)	100.3	101.1	−0.8	+1.1
Trailer dump wagon (b)	106.7	101.4	+5.2	+1.4

(a) January 1955=100 (b) January 1958=100

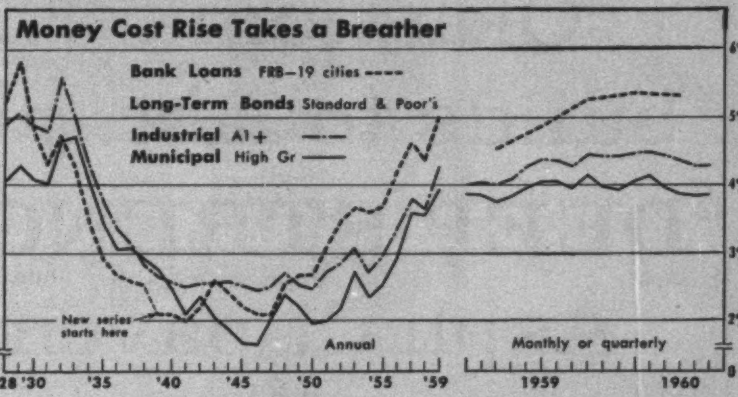
MONEY: Edge Is Off 30-Year High

Construction buyers needing long-term financing for their new projects watch with some relief as money costs recede from the 30-year highs set in late 1959.

And contractors are benefiting cost-wise from a dip in interest rates on bank loans that they need for working capital and equipment financing. Moreover, contractors are probably having a little less difficulty in obtaining their full working capital needs.

These developments of the past few months reflect the fact that demand for credit is dropping into closer balance with the supply of investable funds. The federal government and industry are borrowing substantially less from the capital markets this year than last. This situation is mirrored this month by ten of the 12 Federal Reserve Banks which lower their discount rate by ½% to 3.5% on loans to member banks borrowing funds as reserves against the loans that they make to contractors, other business and individuals.

However, the current easing in interest rates probably won't carry very far. Construction plans are big and there's likely to be a hefty increase in demand for new construction capital in the second half of 1960. This could increase over-all demand enough to firm up money costs, perhaps bring enough pressure to force interest rates to retrace some of the first half's decline.


Money Cost Rise Takes a Breather

Long-Term Bonds*

(Per cent yield to maturity)

Year	US Treas. %	Munici-pal %	Indus-trial %	Public Utility %	Rail-road %
1929	3.60	4.27	5.04	4.96	4.67
1931	3.34	4.01	4.79	4.57	4.42
1939	2.41	2.76	2.64	2.83	3.39
1945	2.34	1.67	2.50	2.59	2.75
1946	2.19	1.64	2.44	2.50	2.59
1949	2.28	2.21	2.53	2.60	2.71
1951	2.60	2.00	2.72	2.90	2.89
1957	3.47	3.60	3.80	3.99	3.94
1958	3.23	3.56	3.65	3.86	3.89
1959 Aver	4.10	3.95	4.28	4.49	4.41
May	4.06	3.97	4.27	4.49	4.38
Dec	4.42	4.05	4.45	4.65	4.66
1960: Mar	4.11	3.87	4.34	4.51	4.55
Apr	4.17	3.84	4.28	4.50	4.55
May	4.15	3.85	4.29	4.54	4.53

Short-Term Business Loans#

Year	New York City %	7 Other Northern & Eastern Cities %	11 Southern & Western Cities %
1929	5.76	5.82	5.93
1931	3.82	4.26	4.90
1938	2.15	3.05	3.62
1945	2.20	2.55	2.80
1946	1.84	2.51	2.97
1949	2.35	2.86	3.17
1957	4.23	4.39	4.65
1958: Mar	4.29	4.49	4.77
Jun	3.88	4.17	4.58
Sep	4.00	4.21	4.54
Dec	4.29	4.50	4.79
1959: Mar	4.29	4.49	4.84
Jun	4.71	4.90	5.07
Sep	5.15	5.27	5.44
Dec	5.19	5.39	5.56
1960: Mar	5.18	5.34	5.57

* Standard & Poor's data: Taxable Treasury bonds (Federal Reserve Bd. series on partially tax exempt bonds shown for years 1929-39 had 1945 value of 1.66%); high grade municipal bonds; A1+ grade industrial, utility and railroad bonds.

# Federal Reserve Board data for June. New Series 1949 to date; two former series cover up to 1938 and 1939-48 and are not strictly comparable.

MATERIALS: Cuts Help Slow Cost Rise

Stable or lower building materials prices eased the cost push that contractors faced in the second quarter of 1960.

Warehouse base prices for structural steel shapes dipped an average of 3% in 12 cities. And major steel service centers also adjusted "item" extras, in effect reducing prices of light shapes, chief target of foreign competition. However, smaller contractors don't get full benefit of the lower cost of structural shapes because warehouse adjustments in "order" extras tend to favor large buyers.

The next quarter should see greater price stability for structural shapes. Demand is up. Fabricators' bookings set a brisk pace in March-April and should continue strong.

By contrast, rebar prices held steady since March and should continue stable in the next quarter as heavy European consumption cuts down imported tonnage available in this country.

Other good news for contractors was a drop in Douglas fir lumber prices. During the past three months, fir 2x4's dropped 2%. They will go lower in the next quarter as lumber mills struggle to get out from under inventories 29% above this time last year. (See Business and Finance.)

Pine lumber prices rose an average of 0.8% during the second quarter, reflecting sharp advances in two southern cities which ran short of grade-marked pine (required on new FHA-insured homes). Pine prices will probably go lower in the next three months.

Plywood sheathing eased in the second quarter with ENR's 20-cities average of ⅜" plyscord sheathing off 0.5%. Production cutbacks may help stabilize prices in the next three months. But, judging from the past record of such cutbacks, it is doubtful whether this action will increase plywood prices next quarter, as plywood men hope.

Cement prices are steady, with the exception of an 0.4% cut in Atlanta's bulk cement prices because of lower freight rates. No changes in local cement prices are anticipated in the next three months. And, of course, mill prices are guaranteed for the balance of the year.

Sand prices are unchanged since March, but crushed stone averages 0.1% lower and ready-mixed concrete is up 0.1%. Brick averages 0.7% higher than March, while concrete block is 1.5% higher. Concrete sewer pipe prices advanced 4% in the second quarter.

Despite price cuts by gypsum producers in April, gypsum sheathing prices held steady in most of ENR's 20 cities. Fibreboard sheathing prices were also generally steady.

Stability was also the order in glass and explosives prices. But paving asphalt declined an average of 1% in ENR cities since March.

OKLAHOMA PROJECT I-205 (5) Interstate Route 40

Oklahoma builds to last...with "DEEP-STRENGTH" Asphalt pavement

- **Hot-mixed—hot-laid Asphalt base promises outstanding service life.**
- **Design overcomes problems of plastic subsoil and short aggregate supply.**

Down in Oklahoma, they've just completed a beauty . . . a new *Deep-Strength* Asphalt pavement that includes many features of The Asphalt Institute's Advanced Design Criteria.

And it won't be the last. That's for sure.

Just take a look at the construction (right) and cross section (below). Notice that precepts of new *Deep-Strength* Asphalt design are incorporated...heavy-duty Asphalt concrete surface course . . . heavy-duty Asphalt base . . . Asphalt primed subbase . . . wide double-sealed Asphalt shoulders (on Asphalt base) . . . heavy compaction . . . good drainage.

When designed like this — for *Deep-Strength* . . . Asphalt pavements will carry the heaviest traffic loads without distress . . . with minimum maintenance cost. Witness the New Jersey Turnpike. Witness also *Deep-Strength* Asphalt city pavements built more than 60 years ago and still in service.

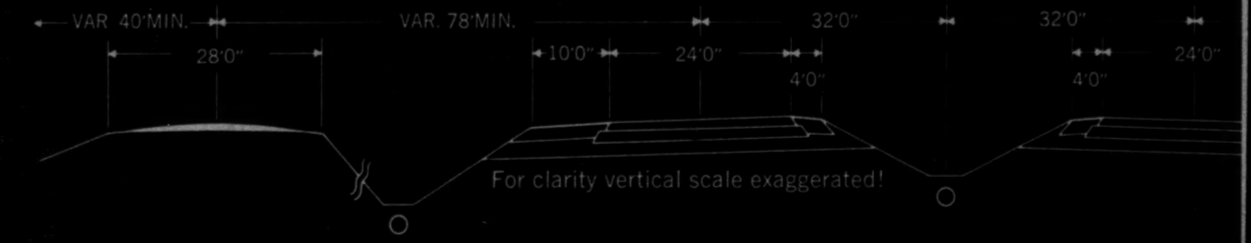
Save money, too

Surprising as it seems at first glance, modern low-maintenance, *Deep-Strength* Asphalt pavements often cost less to build than Asphalt pavements designed to other standards. That's because the Advanced Design Criteria permit inexpensive Asphalt base to be substituted, within limits, for the more expensive Asphalt concrete surfacing. And also because total pavement thickness can often be reduced by several inches.

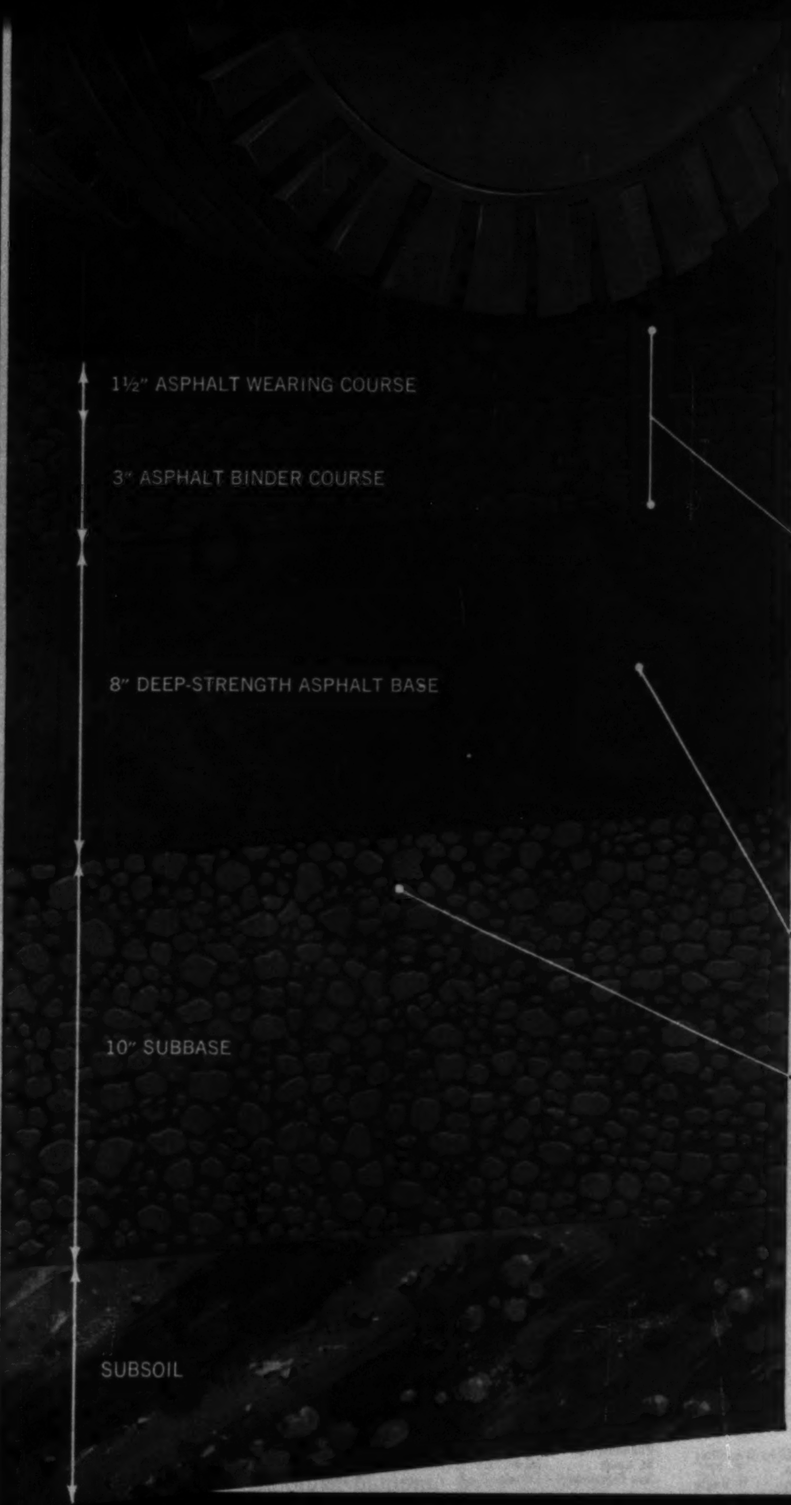
New Handbook

Now on the presses is a new edition of The Asphalt Handbook. It incorporates all the Advanced Design Criteria for highways implied by the term *Deep-Strength* Asphalt Construction. Copies soon will be available at The Asphalt Institute office serving your area.

DEPRESSED MEDIANS ASSIST FREE DRAINING. Note also the Asphalt shoulder construction. These two measures alone can substantially



For clarity vertical scale exaggerated!

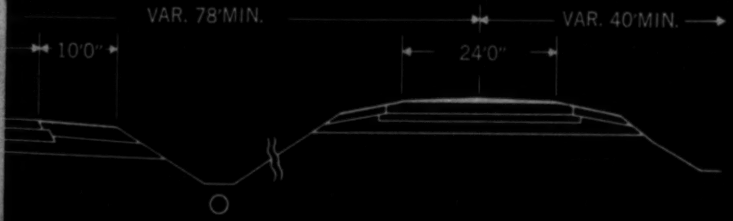

1½" ASPHALT WEARING COURSE
3" ASPHALT BINDER COURSE
8" DEEP-STRENGTH ASPHALT BASE
10" SUBBASE
SUBSOIL

4½-INCH ASPHALT CONCRETE SURFACE takes heaviest traffic, deicing salts without distress. Lane markings show up better day or night, wet or dry.

8-INCH SAND-ASPHALT BASE provides Deep-Strength . . . excludes moisture, insures smoother riding surface under heaviest traffic.

ASPHALT PRIME COAT SEALS SUBBASE . . . insures bond with overlying Asphalt base.

lengthen pavement life.


VAR. 78'MIN.
VAR. 40'MIN.
10'0"
24'0"

Ribbons of velvet smoothness . . .
ASPHALT-paved Interstate Highways.

DEEP-STRENGTH

THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland

2nd Quarterly Cost Roundup

Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	LONG LEAF Y. P. 12x12 Rgh	FIR PLYWOOD ⅝" Interior plyscored, C-D gr.	FIR PLYWOOD ¾" Plyform grade*
Atlanta.......n†	$ 92.00	$ 95.00	$ 85.00	$ 95.00	$ 95.00	$100.00	$130.00	......	......	$140.00	$180.00	$135.00	$370.00
Baltimore......c	98.30	98.00	102.50	102.50	108.00	108.00	125.00	......	......	175.00	190.00	175.00	275.00
	120.00g	*124.00g*	*125.00g*	*128.50g*	*128.50g*	*128.50g*	*150.00g*	*$180.00*	*$170.00*	......	......		
Birmingham....n†r	85.00	87.00	84.00	86.00	91.00	97.30	116.00	......	......	120.00	173.00	120.30	204.50
	80.00	*80.00*	*83.00*	*81.00*	*81.00*	*98.00*	*88.00*	*85.00*	*98.00*	......	......		
Boston..........ns	104.00f	105.00f	105.00f	105.00f	105.00f	122.00a	......	......	......	......	......	155.00c	285.00c
	108.00	*108.00*	*115.00*	*115.00*	*115.00*	*126.00*	*152.00*	*154.00*	*170.00*	......	......		
Chicago........**	118.00	121.00	115.00	129.00	137.00	138.00	133.00	......	......	161.00	161.00	147.00	244.00
	124.00	*124.00*	*137.00*	*135.00*	*135.00*	*136.00*	*144.00*	*144.00*	*144.00*	......	......		
Cincinnati......n*	102.50	103.75	96.50	98.00	104.75	112.75	121.00	......	......	138.00	125.00	94.00f	175.00f
	108.00	*111.00*	*108.00*	*112.00*	*113.75*	*119.00*	*145.25*	*145.25*	*145.25*	......	......		
Cleveland......o**	100.00	102.00	102.00	100.00	104.00	110.00	......	......	......	......	......	122.00a	205.00
	......	......	*115.00*	*110.00*	*112.00*	*116.00*	*140.00*	*140.00*	*140.00*	......	......		
Dallas..........‡	95.00k	99.00k	103.00k	103.00k	103.00k	106.00k	135.00	......	......	133.00	160.00	112.50ac	200.00ac
Denver.........n*	*Not in stock*		*115.00*	*119.00*	*115.00*	*121.00*	*177.00*	*197.00*	*197.00*	......	......	148.50	240.50
Detroit..........‡	140.00	142.50	142.00	138.00	145.50	145.50	......	......	......	153.50	......	150.00gc	225.00gs
	137.25	*137.25*	*148.25*	*146.50*	*155.00*	*160.00*	*199.00*	*216.00*	*216.00*	......	......		
Kansas City....tn	120.00	120.00	130.00	132.50	135.00	150.00	......	......	......	......	......	150.00	215.00
	120.00	*120.00*	*130.00*	*132.50*	*135.00*	*140.00*	*165.00*	*225.00*	*225.00*	......	......		
Los Angeles....xnu	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*134.00*	*143.00*	*143.00*	......	......	128.00	225.00
Minneapolis....ov	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*185.00*	*185.00*	*185.00*	......	......	105.00	305.00
Montreal.......*bp	84.00a	90.00a	84.00a	84.00a	99.00a	125.00a	......	......	......	120.00	120.00	119.25	225.95
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*170.00*	*170.00*	*170.00*	......	......		
New Orleans...†n	89.00	89.00	91.00	95.00	95.00	98.00	126.00	......	......	160.00	155.00	117.19	200.71
	103.50	*103.50*	*105.50*	*105.50*	*105.50*	*106.00*	*122.00*	*115.50*	*115.50*	......	......		
New York......	115.00	118.00	121.00	127.00	127.00	129.00	250.00	......	......	250.00	250.00	121.20a	202.60a
	......	......	*122.00*	*122.00*	*122.00*	*128.00*	*169.00*	*174.00*	*174.00*	......	......		
Philadelphia....nt	110.00	112.00	112.00	110.00	112.00	110.00	135.00	......	......	......	......	150.00h	280.00h
	......	......	*125.00*	*125.00*	*125.00*	*125.00*	*200.00*	*200.00*	......	......	......		
Pittsburgh......sl	135.00	135.00	135.00	135.00	140.00	140.00	165.00	......	......	145.00	185.00	225.00	295.00
	135.00	*115.00*	*145.00m*	*150.00*	*150.00*	*150.00*	*225.00*	*225.00*	*225.00*	......	......		
St. Louis......‡‡n	119.00	121.00	129.00d	129.00d	129.00e	128.00e	......	......	......	......	......	165.30achj	253.00ach
	......	......	*138.00*	*138.00e*	*138.00e*	*138.00e*	*193.00e*	*193.00e*	*193.00*	......	......		
San Francisco..nz	*80.00*	*80.00*	*88.00*	*88.00*	*88.00*	*88.00*	*99.00*	*122.00*	*124.00*	......	......	90–92h	165–167.00h
Seattle.........n†	*64.00*	*68.00*	*71.00*	*71.00*	*71.00*	*72.00*	*85.00*	*90.00*	*90.00*	......	......	107.00aeg	205.00aeg
Toronto.........*	86.00a	90.00a	88.00a	86.00a	88.00	87.00a	105.00a	......	......	89.00a	......	216.00	261.00
	89.00	*92.00*	*102.00*	*105.00*	*108.00*	*112.00*	*135.00*	*150.00*	*150.00*	......	......		

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Federal tax exempt, add 6% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Add 2% sales tax. *n Less 2% disc. 10 days. *o Less 2% disc. 10th. *p Less 1% disc. 10 days. *q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. *r For f.o.b. city price add $8 for pine, $38 for fir eff. 1/1/58. *s asd trucklots. *t trucklots del. *u Retail LCL yard. *v Retail LCL, del. *w add 8% mun. & Prov. tax. *x add 4% sales tax.

* PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ⅝", $151.00; ¾", $171.00 Exterior, waterproof, ⅝", $155.00; ¾", $175.00. *a Delivered. *c Truck lots. *d A-C exterior. *e LCL. *f less 1%, 5 days. *g less 2% for cash. *h less 2% disc, 10 days. *j add 2% sales tax.

GLASS, EXPLOSIVES, CHEMICALS, PILES, TIES

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots
Atlanta	78%	80%e	$0.2495
Baltimore	74%d	74%d	.2695
Birmingham	82%f	82%f	.2495
Boston	72+10%p	72+10%p	.2695
Chicago	72%	72%	.2695
Cincinnati	74%	74%	.2495
Cleveland	74-2-10%	74-2-10%	.2495
Dallas	76%	76%	.2770
Denver	73.5%	73.5%	.2695
Detroit	74-10-10%	74-10-10%	.2695
Kansas City	76-10-10%	76-10-10%	.2695
Los Angeles	$12.88/17.32h	$10.45/14.13h	.2695
Minneapolis	71-10%	71-10%	.2695
Montreal	40-10-5%b	40-10-5%b	23.20h
New Orleans	76%e	76%e	.2695
New York	79% l	79% l	.5030g
Philadelphia	78%	80%	.2695
Pittsburgh	72%	72%	.2495
St. Louis	72-10-10%mo	72-10-10%mo	.2695
San Francisco	60%	73%	.2695
Seattle	$8.85/11.55hiq	$6.41/8.67hjp	.2695
Toronto	$6.49/9.57h	$5.90/8.70h	

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% for single strength. *d From 6/15/52 list. *e 77% for double strength. *f Single strength; double strength, 83%. *g From 8/1/58 list. *h ss/ds, 40-in. *i 20 boxes min. *j CL quantity. *k eff. 12/58. *l eff. 10/15/58. *m less 2% disc, 10 days. *n less 1% disc, 10 days. *o add 2% sales tax. *p less 1% for cash. *q less 2% for cash

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $24.30 In fiber cases: forcite 40%, $24.05; forcite 60%, $25.80.

40% Ammonia Gelatin price ranges in other than urban areas, per lb: (except Seismograph Grades)

	C/L 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2095	$0.2195	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucieand south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	Fir R
12" at butt	6-in.	30 to 39-ft.	$0.42a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.91	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.97	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	1.01	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	1.07	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	1.14	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	1.21	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.34	1.40
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.41	1.40
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.54	1.45
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.67	1.54

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B

* a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:		6" x 8" x 8' Untr.	Tr.	7" x 8" x 8'6" Untr.	Tr.
Birmingham*...	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	2.85–3.00	4.00a–4.10	3.90	4.75–5.00
New York	Mixed Hardwood	3.45	5.10	4.30	6.50
	Mixed Oak	3.55	5.20	4.40	6.60
Philadelphia	Mixed Oak	3.70i	3.87	....	4.57
St. Louis	Mixed Oak	2.65	3.75a	3.10h	4.20ah
San Francisco	Douglas Fir	2.10ef	3.42ef	2.44ef	3.72cs

Tr.—Treated; Untr.—Untreated. aCreosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 9½. *i Mixed Hardwood

CHEMICALS

Water, sewage treatment, road work, carlots, f.o.b. works

Chlorine cylinders, liquid, per lb. freight allowed, N.Y. State	$ .11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, ton	32.00
Silicate of soda, 52 deg., in drums, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags	2.05
Sulphate of copper, in bags, 99% per 100 lb., reg., 25.2% copper content	13.00

See following ENR issues for OTHER PRICES:

- Wage Rates, Building Board, Lath, Insulation: Last, June 2; Next, June 30.
- Cement Aggregate, Ready-Mixed Concrete, Asphalt: Last, June 9; Next, July 7.
- Iron & Steel Products, Pipe: Last, June 16; Next, July 14.
- Clay Products, Lime, Plaster, Paint Roofing: Last, May 26; Next, June 30.

←CIRCLE 76 ON READER SERVICE CARD

CIRCLE 79 ON READER SERVICE CARD→

IN 1947...UNITS #1, 2, 3, 4

IN 1960...UNIT #5

for Sewaren Generating Station

PREDRAINED BY MORETRENCH WELLPOINTS

Owner: Public Service Electric and Gas Co., Newark, N. J.
Contractors: United Engineers & Constructors, Inc., Philadelphia, Pa.
Pumping Contractor: American Dewatering Corporation, Rockaway, N. J.

Adjacent to the Arthur Kill, deep excavation is made in the dry for the Discharge Canal Area, Unit #5, Sewaren Generating Station, Sewaren, N. J.

Moretrench Wellpoints, pumping from 2,000 to 4,000 gpm, are relieving the pressure exerted by 18′ of water in the sand layer underlying the soft black clay.

Repeat orders make it crystal clear that you get results — at a saving — when you work with Moretrench — in the dry!

If you're estimating or excavating a wet job, call us. We can help.

Moretrench Corporation

389 Main Street
Hackensack, N. J.
HUbbard 9-7676
New York Tel.: CO 7-2283

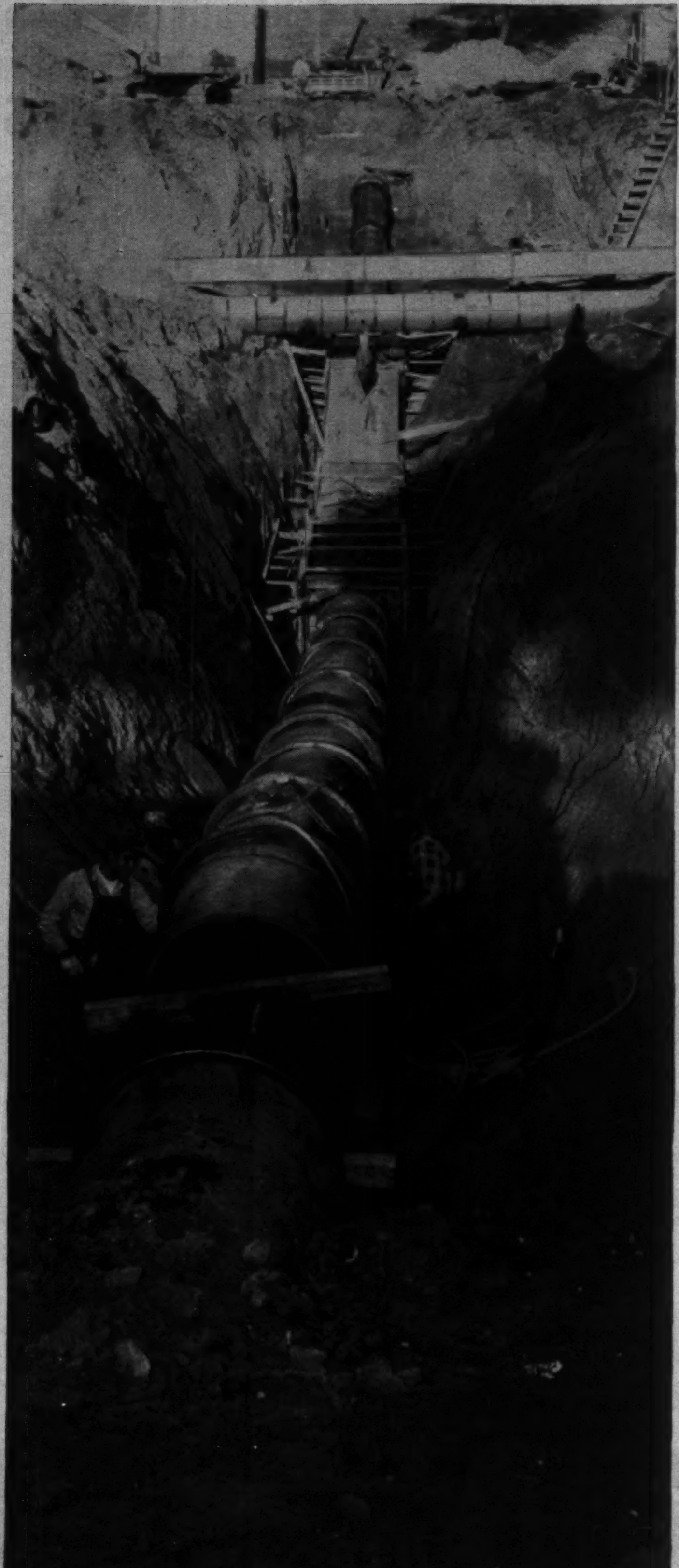
4900 S. Austin Ave.
Chicago 38, Illinois
POrtsmouth 7-4212

7701 Interbay Blvd.
Tampa 9, Florida
TAmpa 61-1881

315 W. 25th St.
Houston 8, Texas
UNderwood 4-7774

Rockaway
New Jersey
OAkwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington
CANADIAN REPRESENTATIVE: Geo. W. Crothers Limited, Toronto, Ontario
BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro



DON'T BE FOOLED BY INITIAL PIPE COSTS...

Certain factors concerning the type of pipe to be used for a proposed water or gas project must be examined carefully:

First

—how much does the pipe cost, compared to other types?

Second

—how often will it require repair?

Third

—how long before it has to be replaced?

After all, how much money do you really save if you buy the cheapest pipe . . . then have to repair it frequently . . . and *then* have to replace it within a decade or two?

You save with cast iron pipe

Sometimes the first cost of jobs where cast iron pipe is specified, is higher than similar projects using cheaper pipe. Yet, in the long run, cast iron pipe costs *less!* Here's why:

- Cast iron pipe rarely requires repairs. Its rugged construction, corrosion-resistant qualities and bottle-tight rubber-ring joints will withstand the most severe pressures. Once an investment is made in cast iron pipe, it is usually your first and last cost because of the absence of maintenance or repairs.
- Cast iron pipe is built to *last*—98 American cities will testify to that. They've had cast iron pipe installations in constant use for over a century! In fact, in Versailles, France, they're still using cast iron pipe water mains that were laid in 1664! Once cast iron pipe is in the ground, it stays there!

Don't be fooled by "low-cost" pipe. Insist on the pipe that will actually save you money over a period of years . . .

In Nebraska—Here a section of cast iron pipe is being relocated. Twenty-five years old, the pipe is still in excellent condition—has never required major repair . . . or replacement.

Rely on CAST IRON PIPE

In Indiana (above)—"All-weather" cast iron pipe is quickly installed despite wet trench conditions. Slip-on joints were easily assembled, with one workman using a crowbar.

In Kansas (above)—36" cast iron water main. Another part of this main was floated out of its trench by a heavy downpour. Later a 150 psi water test revealed no leaks in the slip-on joints!

In Pennsylvania (below)—This 16" cast iron pipe is being installed as fast as the trench hoe can prepare the trench.

Handy lengths and slip-on joints make cast iron pipe easy to handle, even in crowded neighborhood sectors; require less labor.

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

Cast Iron Pipe Research Association,
Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

2nd Quarterly Cost Roundup

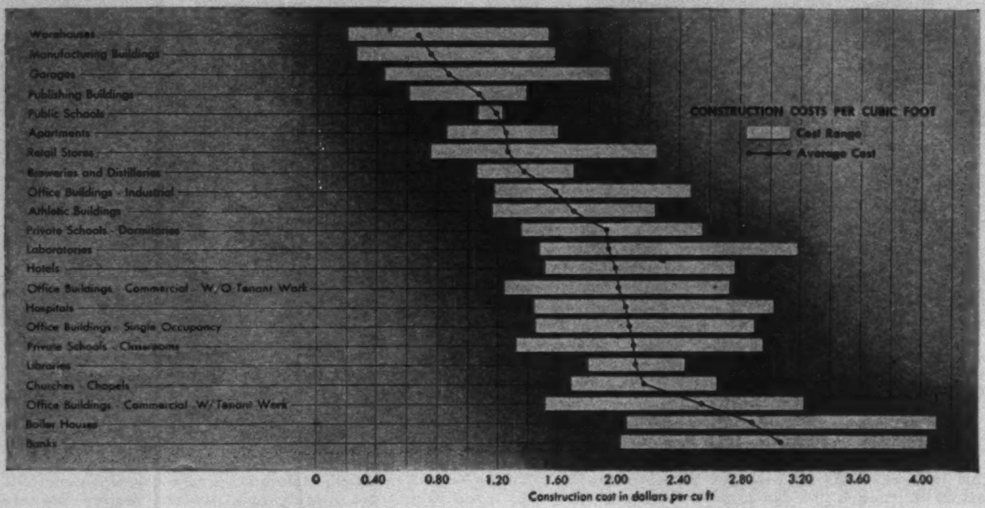
Building Costs

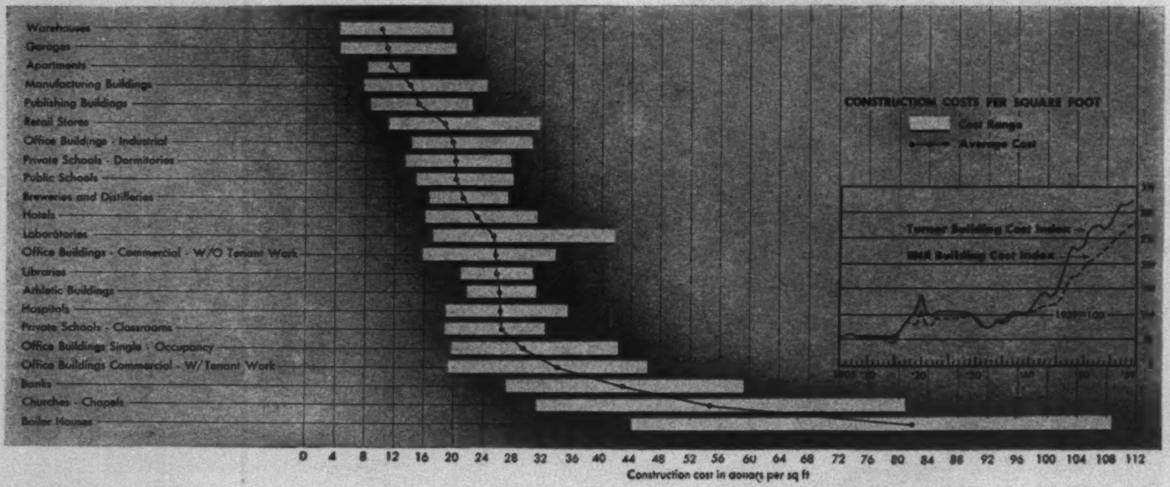
Costs Vary by Type

These unit costs of buildings, computed by Turner Construction Co., show how costs range among different categories and within the same building category. The cost ranges charted are based on a large number of buildings that Turner has built, with actual costs of projects adjusted to Turner's January 1960 costs.

However, the cost ranges can be converted to dates prior to, or after January '60, using the Turner Building Cost Index, reported quarterly and based on 1939 as 100, or the Engineering News-Record Building Cost Index reported monthly (weekly since July '54) on a 1913 = 100 base.

The Turner Building Costs and Cost Index are reprinted here by permission of Turner Construction Co., New York, N. Y.





These costs, both charts, are adjusted to January 1960 prices. These index values apply: Turner 324 (1939 = 100), Engineering News-Record Building Cost 555 (1913 = 100)

To Convert Today's Costs to Other Years: Use These Indexes

INDEX Base=100	Turner '39		Turner '39	ENR '13		Turner '39	ENR '13		Turner '39	ENR '13		Turner '39	ENR '13		Turner '39	ENR '13
1902.....	58	1913..	55	100	1924..	106	186	1935..	89	166	1946..	175	262	1957...	317	509
1903.....	58	1914..	55	92	1925..	107	183	1936..	92	172	1947..	210	313	1958...	317	525
1904.....	54	1915..	57	95	1926..	107	185	1937..	106	196	1948..	233	345	1959...	323	548
1905.....	56	1916..	67	131	1927..	105	186	1938..	103	197	1949..	227	352	Jan..	321	536
1906.....	59	1917..	81	167	1928..	105	188	1939..	100	197	1950..	235	375	Apr..	321	543
1907.....	60	1918..	91	159	1929..	102	191	1940..	106	203	1951..	263	401	Jul..	324	552
1908.....	58	1919..	107	159	1930..	91	185	1941..	119	211	1952..	271	416	Oct..	324	555
1909.....	57	1920..	140	207	1931..	80	168	1942..	135	222	1953	275	431	1960:		
1910.....	56	1921..	101	166	1932..	75	141	1943..	142	229	1954..	269	446	Jan..	324	554
1911.....	55	1922..	97	155	1933..	77	148	1944..	134	235	1955..	274	469	Apr..	324	555
1912.....	55	1923..	107	186	1934..	88	167	1945..	142	239	1956..	299	491	Jun..	...	560

The Turner Building Cost Index is determined by periodically repricing a multi-story industrial building. The factors recognized are Turner's cost experience on labor rates, materials prices, productivity of labor, efficiency of plant and management, competitive conditions and a forecast of price trends.

2nd Quarterly Cost Roundup

Where the Building Dollar Goes

Unit and Ratio Costs Supplied through the Courtesy of Baumann Construction Co., Nevada, Mo.; Catalytic Construction Co., Philadelphia, Pa.; Dickie Construction Co., St. Louis, Mo.; Gotham Construction Corp., New York City; Hegeman-Harris Co., Inc., New York City

TYPE OF: Building	Department Store		Department Store		2 Identical Apartment Houses		Office Building		Office Building		Chemical Process		Dormitory	
Construction: frame....	Steel		Steel		Concrete		Steel		Concrete		Steel		Concrete	
outside walls	Brick				Brick—Cavity		Brick				Cemesto siding		Brick	
Date construction started..........	Dec. 1958		Mar. 1960		Feb. 1, 1960		Dec. 1957		Mar. 1960		June 1958		Sept. 1959	
Location..........................	Washington, D. C.		St. Louis, Mo.		New York City		Westchester, N. Y.		St. Louis, Mo.		W. Virginia		Nevada, Mo.	
SIZE OF BLDG:														
Height, stories..................	2		1		Each 14 stories		4		2		4½		3	
Floor area, sq ft................	133,800 sf		67,972 sf		262,000 sf		133,000 sf		30,024 sf		30,000 sf		15,725 sf	
Volume, cu ft....................	2,745,900 cf				2,222,700 cf		1,788,000 cf				588,000 cf		450,375 cf	
RANGE of Cost of this type of Bldg:														
$ per sq ft......................	$14.85		$9.85*		$11.92		$28.60		$12.63*		$18.09		$14.28	
$ per cu ft......................	0.725				1.40		2.13				0.955		0.498	
% Air Conditioned................	100%				0%		100%				Part of process equipment		0%	
Engineering News-Record Index (1913=100%)..................	535		555		555		516		555		521		556	
PRINCIPAL ITEMS OF COST....	$ and % of Total Cost													
	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Excavation & site improvements....	158,000 a	7.94	57,324	8.56	146,750	4.70	272,000 g	7.16	21,063	5.55	.... e	....	5,400	2.40
Foundations......................	In excavation		35,095	5.24	86,650	2.77	In excavation		77,789	20.51	29,050	5.4	10,800	4.81
Structural frame.................	204,000	10.24	104,245	15.57	759,200	24.31	723,000	19.02	In foundations		159,300	29.3	44,000	19.59
Poured gypsum roof...............	45,000	2.26	....	.....	....	.....	....	.....	....	.....	....	....	....	.....
Cement finish work...............	114,000	5.72	52,339	7.82	30,050	0.98	In struct frame		15,665	4.13	61,850 h	11.4	3,000	1.34
Exterior masonry.................	222,000	11.14	16,704	2.49	300,400	9.62	261,000	6.87	39,213	10.34	1,500	0.3	11,800	5.25
Cemestos exterior wall panels......	....	.....	....	.....	....	.....	....	.....	....	.....	40,600	7.5	....	.....
Metal wall panels................	10,000	0.50	....	.....	....	.....	....	.....	29,782	7.85	....	....	....	.....
Asbestos wall panels.............	....	.....	....	.....	....	.....	....	.....	....	.....	....	....	2,000	0.89
Interior partitions..............	In masonry		....	.....	34,090	1.09	....	.....	In masonry		57,500	10.6	7,200	3.21
Metal office partitions..........	....	.....	....	.....	....	.....	160,000	4.21	....	.....	....	....	....	.....
Carpentry & millwork.............	11,300	0.56	9,439	1.41	104,000	3.33	56,400	1.48	23,597	6.22	....	....	13,600	6.05
Sash & glazing...................	22,200 b	1.11	10,089	1.50	60,180	1.93	12,500 b	0.33	2,546	0.67	8,550	1.6	9,000	4.01
Doors............................	In carpentry		....	.....	In millwork		In hollow metal		....	.....	In sash & glazing		In millwork	
Roofing..........................	28,000	1.40	43,095	6.44	23,250	0.74	41,500	1.09	6,318	1.67	16,500	3.00	6,700	2.98
Insulation.......................	In roofing		....	.....	8,250	0.26	In roofing		....	.....	....	....	1,500	0.67
Waterproofing & dampproofing......	In roofing		....	.....	8,190	0.26	14,000	0.37	420	0.11	....	....	1,600	0.71
Metal lath, furring & plastering.....	135,000	6.78	11,950	1.78	318,100	10.18	120,000	3.16	7,765	2.05	....	....	19,000	8.46
Hollow metal work................	6,500	0.33	1,070	0.20	28,890	0.92	26,600	0.70	1,265	0.33	....	....	10,600	4.72
Misc. iron & ornamental metal.....	105,000 c	5.27	38,050	5.68	69,330	2.22	188,000 c	4.95	10,041	2.65	15,100	2.8	5,800	2.58
Sheet metal......................	....	.....	16,341	2.44	....	.....	....	.....	....	.....	....	....	....	.....
Tile, terrazzo & marble...........	80,000	4.02	2,254	0.34	53,160	1.70	52,000	1.37	8,644	2.28	In inter partitions		4,300	1.92
Floor covering...................	5,500	0.28	15,423	2.30	62,400	2.00	37,300	0.98	9,191	2.42	Finish		5,600	2.49
Painting.........................	22,000	1.10	11,156	1.67	67,020	2.15	27,000	0.71	5,175	1.37	7,500	1.3	4,500	2.00
Finish hardware..................	9,500	0.48	....	.....	9,245	0.30	15,000	0.39	3,417	0.90	....	....	4,800	2.14
Acoustical ceilings..............	9,000	0.45	195	0.03	2,315	0.07	In plastering		896	0.23	....	....	....	.....
Toilet partitions & accessories......	3,200	0.16	....	.....	....	.....	4,250	0.10	....	.....	....	....	1,700	0.76
Plumbing.........................	425,000 d	21.33	26,870 f	4.01	300,500	9.62	100,000 d	2.63	16,232	4.28	35,200	6.5	39,715	17.68
Heating, ventilating & air condition..	In plumbing		99,812 f	14.91	202,200	6.47	970,000	25.52	52,863	13.94	6,850	1.2	In plumbing	
Electrical work..................	255,000	12.80	97,400 f	14.55	225,250	7.21	485,000	12.76	47,400	12.50	52,700	9.7	12,000	5.34
Sprinklers.......................	In plumbing		20,451 f	3.06	....	.....	In plumbing		....	.....	10,500	2.0	....	.....
Elevators........................	32,000	1.61	....	.....	136,350	4.37	167,000	4.39	....	.....	40,000	7.4	....	.....
Moving stairs....................	80,000	4.02	....	.....	....	.....	....	.....	....	.....	....	....	....	.....
Incinerator......................	10,000	0.50	....	.....	....	.....	....	.....	....	.....	....	....	....	.....
Walk-in refrigerator.............	....	.....	....	.....	....	.....	8,300	0.22	....	.....	....	....	....	.....
Food service equipment...........	....	.....	....	.....	....	.....	60,600	1.59	....	.....	....	....	....	.....
Miscellaneous equipment..........	....	.....	....	.....	87,290	2.80	....	.....	....	.....	....	....	....	.....
Total Cost.......................	$1,992,200	100%	$669,302	100%	$3,123,000	100%	$3,801,450	100%	$379,222	100%	$542,700	100%	$224,615	100%

a Excavation & foundations $76,000; site improvements $82,000 b Glazing only. Sash in misc iron & ornamental met c Includes sash d Includes sprinklers e Part of total job f Under separate contracts g Excavation & foundations, $109,000; site improvements $163,000 h Floor slab & elevated floors

* Computed on basis of construction costs reported below

This report is the sixteenth in Engineering News-Record's Building Dollar series. Earlier reports were published in ENR Oct. 8, 1953; Sept. 29, 1955; July 5, 1956; Aug. 2, 1956; Dec. 6, 1956; Oct. 17, 1957; Mar. 20, 1958; Sept. 18, 1958; Dec. 25, 1958; Mar. 19, 1959; June 18, 1959; Sept. 17, 1959; Dec. 17, 1959; Mar. 24, 1960.

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Bidding is lively for construction of . . .

Cloverleaf Interchange

Fifteen contractors competed for this widening of U. S. Route 1 in Middlesex County, N. J., which includes construction of a cloverleaf interchange at Milltown Road.

The New Jersey State Highway Department award at $897,467, went to Hess Bros., Inc., Parlin, N. J., on a low bid less than 1% under that of his nearest competitor. The next four bids followed closely, the sixth low being only 4.5% over the award.

The overpass bridge consists of two simple spans, each having a skewed span of approximately 65 ft. Two 30-ft roadways will be divided by a 4-ft median. Each roadway will be bounded on the outside by an 8-ft sidewalk and a parapet surmounted by a metal railing. The bridge deck will consist of longitudinal rolled beam stringers supporting a reinforced concrete deck slab. The substructure will have one pier and two abutments of reinforced concrete, supported on spread footings.

Contractors must maintain and protect traffic during construction of the overpass, and provide detours, the cost of such work being included in the price bid for the contract.

The road work consists of grading; pavement excavation; bituminous stabilized base course; bituminous concrete pavement; concrete curbs and sidewalks; crib wall; drainage; topsoiling; planting of trees and shrubs; demolition of buildings, and incidental work.

Minimum wages range from a high of $1.75 for skilled, through $1.25 for semi-skilled, through $1.00 for common laborers.

The bidding included:

1C	Hess Bros., Inc., Parlin, N. J.	$897,467
2	Public Constructors, Inc., Blackwood, N. J.	903,703
15	S. J. Groves & Sons Co., Woodbridge, N. J	1,036,615

Bids: 3-10-60 Items	Unit	Quantity	Unit Prices 1C	 2
Engineering	ls	job	$9,000	$20,000
Maintenance of traffic	ls	job	7,500	10,000
Field office	ls	job	3,000	2,000
Traffic directors	hr	1,000	2.35	2.75
Clearing site	ls	job	6,000	10,000
Demolition of buildings	ea	2	400.00	100.00
Stripping	ac	8	275.00	500.00
Drill holes thru pavement	ea	25	2.00	1.00
Excavation, uncl roadway	cy	57,688	0.70	0.85
Remove curb	lf	12,000	0.75	0.25
Pavement, excavation	sy	1,854	2.50	2.00
breaking	sy	70	1.00	2.00
removal of conc island	sy	1,375	1.50	3.00
Porous fill	cy	2,907	2.85	2.50
Exc, earth, for test pits	cy	60	10.00	20.00
rock, subsurf structs	cy	150	10.00	25.00
earth, subsurf structs	cy	50	6.00	20.00
Subbase	cy	16,000	2.35	2.50
Topsoiling, 4"	sy	41,000	0.37	0.35
Mulching	sy	41,000	0.05	0.035
Bit stab base course, 6"	sy	29,439	2.00	2.13
7"	sy	9,515	2.35	2.45
....	t	1,600	7.25	7.00
conc shoulder, 2-3/4" avg	sy	2,752	1.50	1.35

Bids: 3-10-60 Items	Unit	Quantity	Unit Prices 1C	 2
Pavement, type FABC-2				
3" thick	sy	24,378	$1.60	$1.40
top course, 1½" thick	sy	53,993	0.85	0.80
2" thick	t	5,406	9.50	9.00
Broken stn or washed gravel	cy	170	9.00	5.00
Conc, cl C, headwalls, aprons	cy	20	80.00	90.00
Underdrain, type F	lf	500	3.00	3.25
R. C. culvert pipe, 12"	lf	192	4.50	4.25
15"	lf	1,412	5.00	4.90
18"	lf	1,135	5.50	5.30
24"	lf	711	8.00	7.10
30"	lf	259	10.00	9.10
36"	lf	148	12.00	10.70
54"	lf	622	25.00	23.00
54"ext str	lf	170	28.00	26.00
Steel pipe sleeve,18", 3/8" th	lf	100	30.00	17.00
CM culv pipe, 12"	lf	25	6.00	4.00
CM pipe, 6"	lf	141	3.00	3.00
Clean exist drain struct	ls	job	1,000	1,000
Manhole	ea	2	300.00	200.00
using exist cast	ea	2	260.00	125.00
Inlet, type B	ea	24	300.00	200.00
type E	ea	11	325.00	225.00
type B, using exist cast	ea	10	250.00	125.00
converted to manhole	ea	4	200.00	150.00
Spec intersec chamber, tp E	ea	2	1,500	500.00
inlets, type B	ea	1	750.00	300.00
type E	ea	1	650.00	300.00
tp E, using exist cast	ea	2	500.00	225.00
Inlets, reconstructed	ea	6	290.00	125.00
extra depth below 8'	lf	5	40.00	40.00
MH & inlet heads, reset	ea	21	60.00	50.00
White conc vert curb, 9x20"	lf	20,452	2.70	2.35
barrier curb, 30x25½"	lf	3,085	7.00	6.25
dow, 30x23½"	lf	1,708	6.75	6.10
19x25½"	lf	2,249	6.00	5.35
dow, 19½x23½"	lf	302	5.90	5.30
24x23½"	lf	253	6.50	5.90
Conc sidewalk, 4" thick	sy	1,500	5.00	4.40
white, isl pavement, 4" th	sy	700	7.00	6.25
cribbing	cf	5,032	6.00	5.50
Stone fill for crib wall	cy	215	10.00	5.00
Monument	ea	15	30.00	20.00
Fed proj marker posts	ea	2	35.00	30.00
Beam guard rail, standard	lf	2,584	2.60	2.40
Traffic guides, wood	ea	20	35.00	25.00
W. I. pipe conduits, 3"	lf	1,473	4.00	3.25
Junction boxes, 18x36"	ea	42	140.00	125.00
CIP, 12", cl 250, mech jt	lf	755	10.00	10.75
Steel pipe sleeve, 20",3/8"	lf	100	20.00	21.00
Clamp, Dresser style 60 or app equal	ea	44	45.00	40.00
Topsoil	cy	280	3.25	2.75
Manure	t	7	15.00	15.00
Mowing	ac	8	20.00	5.00
Norway maple column, 10-12'-1½-1 3/4"	ea	34	15.00	20.00
Sugar maple, 14-16'-3-3½"	ea	13	90.00	85.00
East red oak, 10-12'-1½-1 3/4"	ea	19	25.00	20.00
Babylon weeping willow, 8-10'	ea	3	6.00	12.00
Pine, Austrian, 5-6'	ea	19	30.00	19.00
Eastern white, 4-5'	ea	12	15.00	12.00
Japanese black, 6-7'	ea	16	50.00	25.00
Dogwood, flowering, 5-6'	ea	47	12.00	8.00
red, 4-5'	ea	16	15.00	8.00
Kousa, 4-5'	ea	43	12.00	8.00
Washington hawthorne, 4-5'	ea	35	10.00	9.00
Eley purple crabapple, 6-8'-1-1¼"	ea	26	8.00	8.00
Inkberry, 12-18", 5' spacing	ea	120	6.00	4.00
Japanese creeper, 2 yr #1	ea	100	2.50	1.50
Laland firethorn, 2½-3'	ea	15	7.00	3.00
Max Graf rose, gr. 1, 5' spacg	ea	525	2.00	1.25
Amer cranberrybush viburnum, 3-4'	ea	285	3.00	2.00
Yellowroot, 2yr #1,12' spacg	ea	500	2.00	1.75
Excavation, foundation	cy	1,460	3.00	5.00
Conc, cl B, in structs	cy	478	74.80	75.00
cl C, in structs	cy	1,635	46.00	48.00
cl D, in structs	cy	30	35.00	50.00
parapet	lf	313	10.50	10.00
Reinf stl in structs	lb	198,800	0.17	0.20
Structural steel	lb	567,000	0.133	0.155
Shear connectors	ls	job	3,000	2,850
Metal railing	lf	313	6.80	7.00
CIP, 8"	lf	91	10.00	15.00
CMP, 8"	lf	560	4.00	4.50
Conduit system, complete	ls	job	3,070	1,475
Field office	ls	job	1,500	2,000

Commence: About 4-1-60. Complete: 220 working days
Liquidated damages: 0.02%/day

(*Unit Prices continued on p. 86*)

engine power

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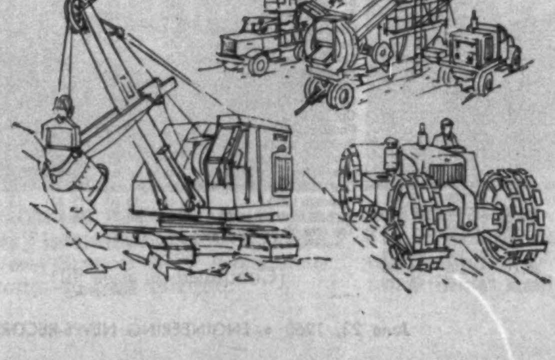
Engine Division, Caterpillar Tractor Co., Peoria, Ill., U.S.A.



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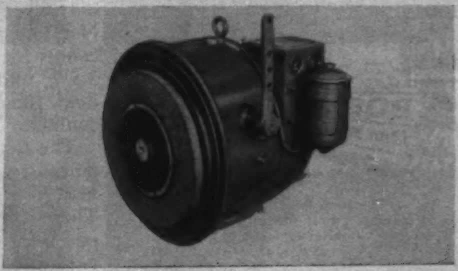
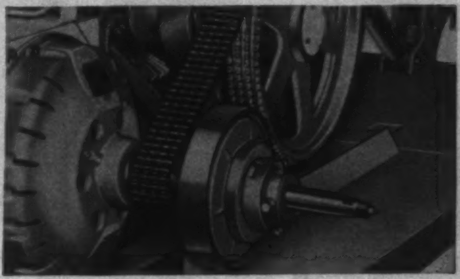
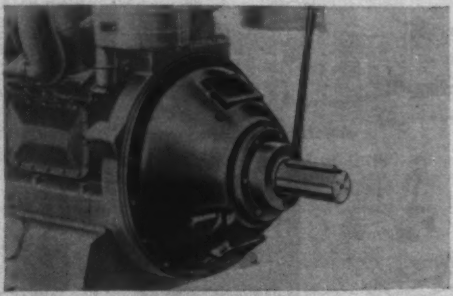


Caterpillar Torque Converter provides high torque to start loads easily.



Caterpillar Fluid Coupling reduces shock loading without increasing engine torque.



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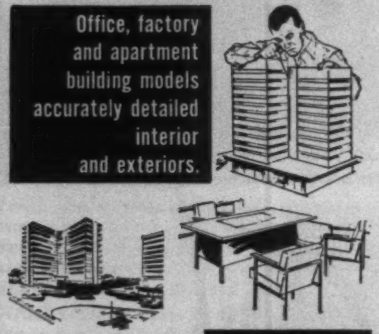

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Low price on precast tubes wins award on . . .

Elizabeth River Tunnel, Virginia

Eleven precast tube sections about 300 ft long will be floated into position and sunk into a trench for the underwater section of the second Elizabeth River vehicular tunnel from Norfolk to Portsmouth, Va. The tunnel was awarded by the Elizabeth City Tunnel Commission, Portsmouth, at $11,631,669 to Diamond Construction Co., Savannah, Ga. Parsons, Brinckerhoff, Quade & Douglas, New York City, is the consultant.

Diamond's low bid was 12% under the engineers estimate. The lump sum bid of $8,836,609 for the precast tubes, Norfolk mole, dredging and fill accounts for 76% of the contract and is 2.5% under the second bid for this item, the advantage needed to take the contract.

The two-lane tunnel will be 4,194 ft, portal to portal, and have approximately 600 ft of approach roadways. There will be two ventilation buildings, one portal tide gate and building, and cut and cover tunnels to portals.

No unusual difficulties are anticipated in connection with the construction of the tube, but some problems may arise at each shore connection point.

Concrete must attain a compressive strength of 3,000 psi at 28 days. Cast iron pipe is class 250.

Construction was scheduled to commence in April.

The bidding included:

1C	Diamond Constr. Co., Savannah, Ga.	$11,631,669
2	Tidewater Constr. Co., Merritt, Chapman & Scott, Norfolk, Va.	11,938,234
6	Peter Kiewit & Sons, Mid Vally, Inc., Raymond Internationa , Va.	13,451,484
EE	Parsons, Brinckerhoff, Quade & Douglas, New York City	13,285,200

Bids: 2-17-60 Items		Quantity	Unit Prices 1C	2
Precast Tunnel, Norfolk Mole, etc.				
Pcst tubes, mole, dredg & fill	ls	job	$8,836,609	$9,060,569
Unit prices for adj in above lump sum bid: dredging, additional ordered	cy		2.85	3.25
port cmt over/under 85,000 bbl	bbl		4.00	3.65
Protect Portsmouth facil, exc RR trks & trk supports	ls	job	51,000	52,000
RR trk & trk supports	ls	job	25,000	14,000
Cut & Cover Tunnels & Building Substructures				
Excavation	cy	50,000	18.00	17.50
Concrete	cy	18,000	46.00	51.50
port cmt for	bbl	25,000	3.90	3.74
Steel reinforcing	lb	2,400,000	0.14	0.14
Memb wtrprfg, 2 ply	sy	5,400	2.65	2.95
3 ply	sy	2,700	3.65	3.45
4 ply	sy	4,000	5.20	5.00
Brick in mastic waterproofing	cy	2,000	135.00	130.00
Ceramic ceil tile	sf	13,300	2.15	2.40
Metals, misc	ls	job	52,000	47,000
Electrical work	ls	job	65,000	51,000
Piping & fresh air flues	ls	job	42,000	70,000
Portal tide gate & machinery	ls	job	55,000	75,000

Completion schedule: 605 cal days
Liq dam: $500 per stage per day. $1,000 maximum, all stages, per day

Highway Bid Price Trends in New York

Selected unit prices for 1957-59 showing weighted averages of contract prices from 10 districts. Department of Public Works, Division of Construction, State of New York.

Items		Unit	1957	1958	1959
Applying water		Mgal	$2.35	$2.137	$1.987
Excavation, uncl		cy	0.82	0.752	0.555
trench, culv & bridge		cy	3.86	4.045	3.039
Overhaul		sy	0.004	0.005	.....
Trimming road section		lfrd	0.56	0.570	0.505
Preparing fine grade		sy	0.26	0.247	0.221
Sewer pipe vit	4"	lf	2.07	2.173	2.657
	6"	lf	2.61	3.420	3.078
	8"	lf	3.14	3.175	2.967
	10"	f	3.81	5.118	3.898
	12"	lf	7.13	7.317	6.842
	15"	lf	11.66	12.257	10.654
	18"	lf	10.96	17.652	15.358
	24"	lf	24.42	21.129	15.864
Underdrain VCP	4"	lf	1.00	1.000	.....
	6"	lf	....	1.000	1.007
Cor met pipe heavy	12"	lf	4.61	4.686	4.417
	15"	lf	5.64	5.676	5.938
	18"	lf	6.40	6.151	5.925
	24"	lf	10.57	9.918	9.567
	30"	lf	15.11	14.724	16.149
	36"	lf	17.75	17.901	19.180
Cast iron pipe	6"	lf	5.66	4.932	4.696
	8"	lf	6.51	7.302	6.250
	12"	lf	10.85	8.392	11.740
	18"	lf	14.00	16.186	21.048
	20"	lf	16.00	22.000	.....
	24"	lf	19.86	29.164	23.831
Reinf conc culv pipe	12"	lf	4.34	5.000	4.589
	15"	lf	6.88	5.613	5.666
	18"	lf	7.29	7.209	6.849
	24"	lf	9.79	10.057	9.954
	30"	lf	13.95	13.858	13.553
	36"	lf	16.82	17.370	17.319
	48"	lf	27.01	26.168	29.339
	54"	lf	30.11	42.139	34.030
	60"	lf	39.53	41.516	45.188
Reinf conc sewer pipe	12"	lf	$4.04	$4.388	$4.354
	15"	lf	4.41	4.903	5.026
	18"	lf	6.11	6.246	6.292
	24"	lf	8.64	8.952	9.263
	30"	lf	12.52	11.794	13.050
Portland cement:					
Type 2		bbl	5.05	5.078	5.207
Type 2A		bbl	4.96	4.896	4.912
Type 6A		bbl	12.06	11.382	10.524
Natl cmt, type N		bbl	5.52	5.596	5.704
Conc for struct cl 1A		cy	63.23	58.674	55.651
Cl 1		cy	53.02	48.268	44.162
Cl 2		cy	44.74	38.393	48.386
Cl 3		cy	35.95	27.477	33.819
Masonry, stone		cy	195.73	185.640	185.000
Met reinf, conc pave		sy, p	0.87	0.976	0.922
Steel fab reinf		sy	0.98	0.862	1.045
Bar reinf, conc pave		lb	0.19	0.158	0.174
Trans jt supports		lfjt.	1.68a	1.721a	1.676a
Longit jt supports, opt		ea	0.80	0.858	0.823
Bar reinf for structures		lb	0.159	0.153	0.141
Spiral bar shear connector		lb	0.79	0.594	0.523
Structural steel		lb	0.22	0.172	0.148
Misc metals		lb	0.31	0.288	0.245
Opt. guide railing		lf	2.73	2.657b	2.596b
Opt. guide posts		ea	9.45	9.550	8.879
Fndn crse ROB gravel		cy	2.30	1.821	1.622
Bott crse broken stone		cy	7.63	7.695	7.202
bit mac pen meth asph		cy	8.33	8.777	8.889
Conc fndn for pavement		cy	14.04	14.345	13.228
Cmt conc pavement with carbon black		cy	15.03	15.441	15.100
Asphalt concrete tp 2A		t	10.72	11.929	11.694
Top crse bit mac tp 1, pen method hot asph		cy	8.38	9.604	8.621

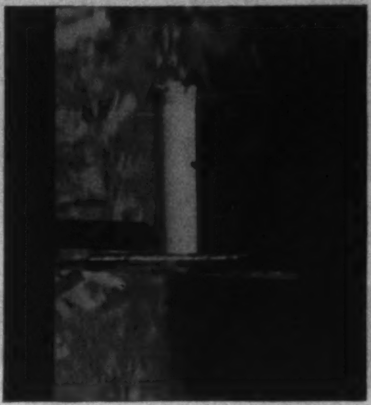
(Continued on page 90)

Birth Of A Blast

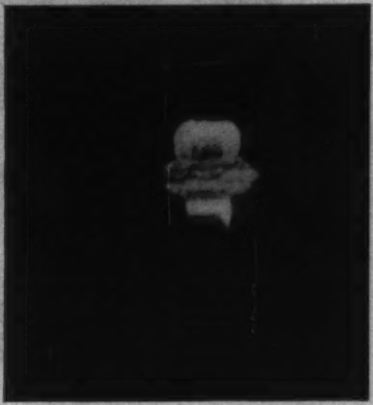
Many unique tools are used by Spencer Chemical Company in blasting research. For example, these exclusive photos, taken at intervals of seven millionths of a second by a special camera, record the detonation of a 4-lb. mixture of Spencer N-IV Ammonium Nitrate and fuel oil.

Research like this, conducted by Spencer's own staff, and sponsored by Spencer at leading U. S. research centers, results in new and better ways to use Spencer N-IV and fuel oil for blasting.

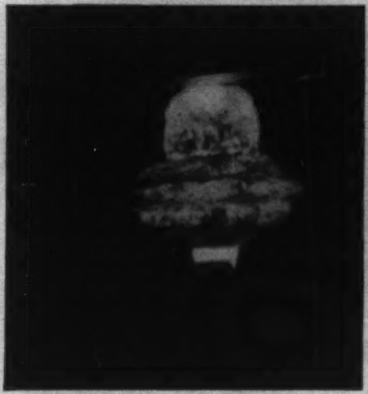
Spencer Chemical Company would like to share this knowledge with you. For information, use the coupon below.



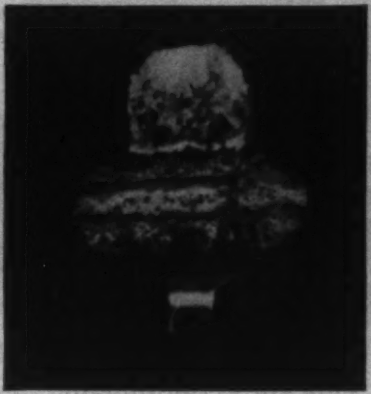
2:13 P.M. The 13"-long charge, containing 94% Spencer N-IV Ammonium Nitrate and 6% fuel oil is about to be detonated.



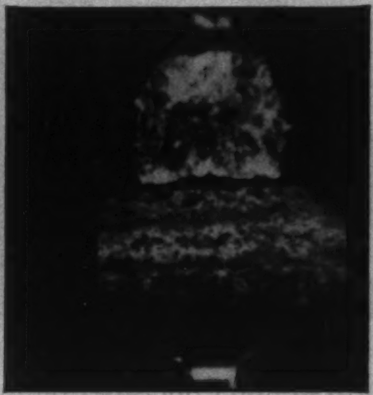
2:13.000028 P.M. The detonation wave has already spread over nearly one-third of the Spencer N-IV—fuel oil mixture.



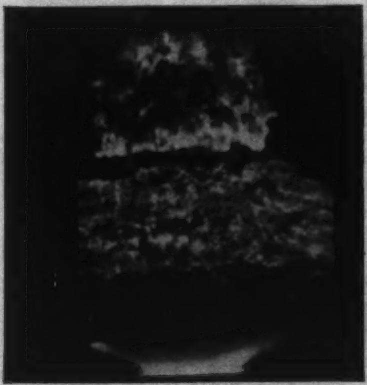
2:13.000056 P.M. This mighty, but controllable, energy is partly a result of N-IV's special structure and greater nitrogen content.



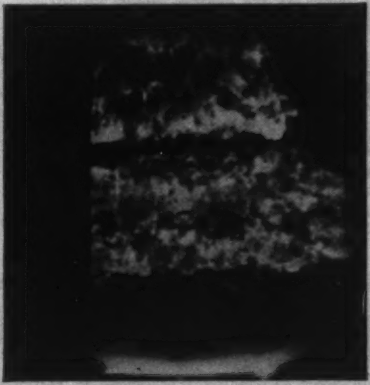
2:13.000088 P.M. Shown here is the great detonation velocity of the N-IV—fuel oil mixture. Yet, N-IV is safe to store and handle.



2:13.000128 P.M. The continuous and even release of energy shown here is a result of extensive Spencer research.



2:13.000160 P.M. Near maximum energy is now being released by the low-cost Spencer N-IV Ammonium Nitrate—fuel oil mixture.



2:13.000184 P.M. Full detonation! For information on how you can use Spencer N-IV Ammonium Nitrate, fill out, mail coupon at right.

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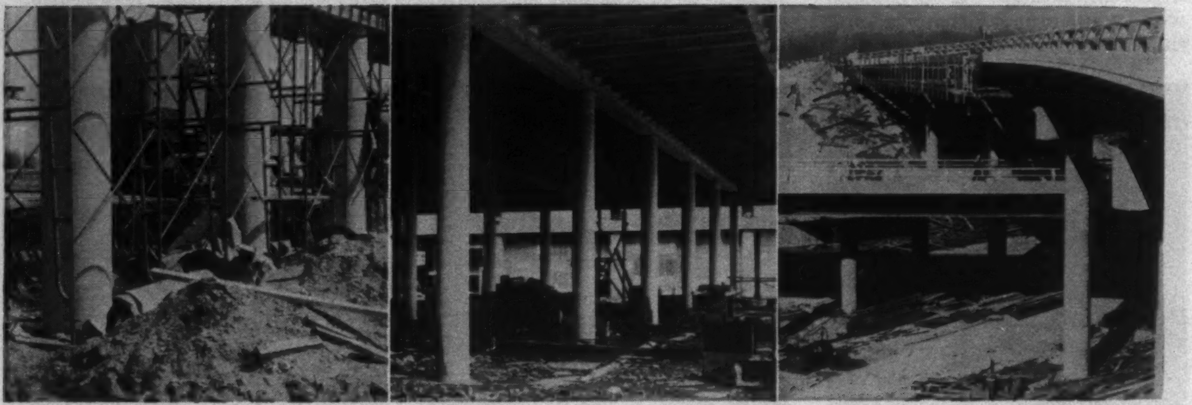

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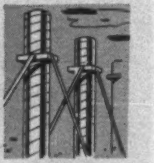

Only minimum bracing is required

Pour by normal method at normal rate

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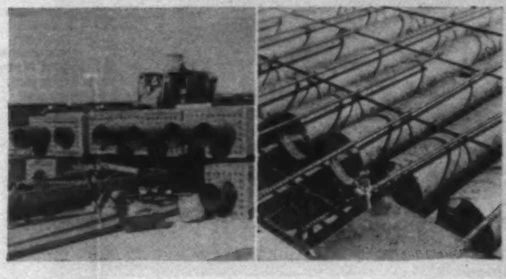
SONOCO SONOVOID® FIBRE TUBES



Lightweight, structurally strong concrete slabs and piles may be produced by displacing low-working concrete with SONOVOID Fibre Tubes. Such voids reduce dead load in the member as well as the amount of concrete and steel required . . . for economical construction.

In bridges and buildings, this weight reduction means additional savings in foundations and supporting members. Also, for voided precast piles, less costly handling and driving equipment may be used.

Sonoco SONOVOID Fibre Tubes are specifically designed to form voids in floor, roof, and lift slabs, bridge decks, and in precast, prestressed members. Lightweight and easy to handle and place, they save contractors and *owners* time, labor, materials and money.

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By strategically placing IGLOO Water Coolers about the job (one for every 6 or 8 men) you will have less "watering time" and more work. IGLOO's built-in cleanliness pays off in employee relations, too.

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MEMPHIS 18, TENN.

. . . New York State Highway Prices

Items	Unit	1957	1958	1959
Membrane waterproofing	sy	$3.19	$3.302	$3.400
Prot crse for membr waterproofing	sy	3.90	5.424	5.308
Paving asph, pen constr	gal	.....	0.178	0.168
T road tar c	gal	0.264	0.270	0.260
T road tar d	gal	0.261	0.265	0.232
Stone filling	cy	5.99	4.646	4.292
Dry stone paving	sy	6.80	6.713	7.334
Riprap, dry	cy	16.38	13.375	13.706
grouted	cy	21.02	21.885	19.105
Sheet piling timber	sf	1.83	1.239	0.431
Timber piles, untreated	lf	1.86	2.440	2.229
creosoted	lf	.....	1.938	1.830
Piles, conc, 12 x 3/16", cip	lf	5.42	4.815	4.805
Clean existing pavement	mi	125.05	163.899	146.291
	sy	0.044	0.076	0.053
Screened gravel, LM	cy	5.16	5.482	8.297
Reset old curb	lf	3.62	3.578	2.839
Conc curb, type C	lf	1.50e	3.464	3.688
reflecting, tp ABR	lf	1.38	2.500	3.000
gutter, general	sy	5.78	6.022	6.908

Items	Unit	1957	1958	1959
Catch basins, manholes & drop inlets	cy	$73.85	$68.418	$59.741
Alter manhole & catch basin	ea	56.33	65.530	67.050
Conc rt of way marker	ea	10.63	9.414	9.038
sidewalk, 6"	sy	5.16	5.776	5.113
Timber & lumber	Mfbm	283.18	117.453	247.739
stress graded	Mfbm	579.76	363.682	500.000
creosoted	Mfbm	446.69	406.010	456.830
Relay old pipe	lf	2.68	2.384	2.806
Emuls carbon black	lb	0.11	0.104	0.101
Highway RR barricade	lf	9.24	9.121	8.942
Reflect hwy-RR xing signs	ea	157.67	178.428	252.083
Topsoil f&p	cy	3.69	2.862	2.831
from stock pile, place	cy	1.12	1.115	0.973
Seeding	ac	314.15	291.065	275.910
Mulching	ac	166.90	189.843	156.111
Sodding	sy	1.35	1.437	1.304

a Dowel type b Cable guide railing c Surf treat rd mix, premix & seal ct d Prime coat & light surf treat e General

Highway Price Trends in Wisconsin, 1957-59

Average contract prices on items show mixed trend

		Average Unit Prices		
Items	Unit	1957	1958	1959
Clear	sta	$41.34	$43.98	$34.89
	ac	258.59	170.12	166.35
Grub	sta	40.94	44.41	33.97
Excavation, common	cy	0.32	0.29	0.35
rock	cy	0.64	0.85	1.58
uncl, rural	cy	0.36	0.352	0.34
urban	cy	0.73	0.63	0.59
struct, bridges	cy	6.53	4.505	4.00
culverts	cy	4.24	3.68	3.36
Borrow exc, rural	cy	0.47	0.43	0.41
urban	cy	0.52	1.00	0.70
Subbase, granular	cy	0.57	0.58	0.64
Conc base course, 9"	sy	4.43	.4.27	4.28
Base course, gravel	cy	1.64	1.58	1.37
	t	0.99	1.01	1.10
cr stone	cy	2.14	1.988	2.31
	t	1.47	1.46	1.36
traf bound	cy	1.44	1.86	1.42
Conc pave, 9" rural	sy	3.35	3.32	3.55
urban	sy	4.37	3.87	4.20
reinforcement	sy	0.56	0.56	0.56
Bit surf, prep for roadbed	sta	5.70	7.32	7.29
matl for prime coat	gal	0.18	0.18	0.17
surf crse, rural	t	32.90	30.75	30.05
surf plt mix, single aggr, rural	t	3.84	4.56	3.66
conc pave, rural	t	4.07	4.71	4.02
urban	t	7.18	5.87	6.26
Conc masonry, bridges, rural	cy	63.25	54.64	56.59
urban	cy	63.00	48.29	44.15
culv, rural	cy	57.09	56.28	53.77
Stl, bar reinf, bridges	lb	0.12	0.117	0.12
culv	lb	0.13	0.124	0.12
Stl, struct carbon	lb	0.22	0.16	0.17
Sheet lead	lb	0.55	0.464	0.59
zinc	lb	0.73	0.795	0.61
Lumber & timber treated	Mbm	497.29	394.62	482.58
Masonry mortar rubble	cy	30.00	28.69	29.82
Culvert pipe, 18"	lf	3.64	3.57	3.74
24"	lf	5.54	5.61	5.82
30"	lf	7.14	7.28	7.75
36"	lf	10.81	11.23	11.66
42"	lf	14.06	13.57	13.97
48"	lf	16.55	16.47	16.29
54"	lf	18.67	21.46	18.81
60"	lf	25.33	26.00	25.42
72"	lf	31.81	31.98	32.50
RC culv pipe, 18"	lf	4.06	3.53	3.81
24"	lf	6.17	5.84	6.47
30"	lf	8.42	8.58	8.45
36"	lf	11.94	12.19	12.31

		Average Unit Prices		
Items	Unit	1957	1958	1959
RC culv pipe, 42"	lf	$15.36	$14.82	$13.87
48"	lf	19.24	16.87	16.68
60"	lf	29.86	28.48	29.74
Corr galv sht met culv pipe, 18"	lf	3.80	3.78	3.97
24"	lf	5.86	5.64	5.81
30"	lf	8.00	7.49	7.99
36"	lf	11.46	11.89	12.26
42"	lf	16.84	16.16	14.32
48"	lf	16.00	18.54	15.65
60"	lf	25.00	28.80	27.80
72"	lf	30.34	33.39	34.77
CMP arch, 22"x13"	lf	6.03	4.02	5.11
29"x18"	lf	7.13	6.45	7.08
Struct pl pipe arch, 8'	lf	43.48	57.40	43.56
10'	lf	60.00	78.73	85.00
12'	lf	80.00	100.55	90.00
14'	lf	80.00	107.99	85.00
Piles, untr timb del	lf	1.81	1.49	1.34
dr	lf	0.71	0.45	0.36
treated timb del	lf	2.42	2.44	2.12
dr	lf	0.55	0.37	0.37
steel del	lf	3.80	3.83	3.94
dr	lf	0.93	0.885	0.65
conc, cip del	lf	7.02	7.06	5.44
dr	lf	1.24	1.54	1.56
Pipe shoes	ea	7.75	6.86	7.91
Galv stl conduit, 3"	lf	2.72	2.80	2.66
Fiber duct, 3"	lf	2.17	2.63	2.16
Floor drains	ea	47.30	29.58	67.95
Riprap	cy	10.46	10.10	11.52
Slope pave, grtd rubble	sy	5.63	5.32	5.74
Pipe underdrain, 6"	lf	1.77	3.38	2.50
8"	lf	3.21	3.53	2.74
12"	lf	4.19	3.33	5.74
RCCP storm sew, 15"	lf	6.39	4.84	6.82
18"	lf	10.00	4.98	7.49
24"	lf	11.22	7.42	10.71
30"	lf	15.31	11.70	16.22
Conc curb type J	lf	1.87	2.36	2.73
& gutter, 30"	lf	2.46	2.31	2.38
sidewalk 5"	sf	0.45	0.47	0.45
Grd fence, cable	lf	1.91	1.79	1.45
anchors for	ea	57.01	59.99	63.64
stl plate beam	lf	2.81	2.45	2.55
Marker posts	ea	4.87	4.86	4.92
Surf treat, $CaCl_2$	t	52.07	51.99	55.78
Topsoil	sy	0.17	0.164	0.133
Straw mulch	sy	0.05	0.048	0.05
Fertilizer	cwt	5.17	5.02	5.02
Seeding	sy	0.016	0.016	0.02
Sodding	sy	0.55	0.55	0.60

Utah Highway Prices, 1957-59

Uneven price trend indicated by this comparison of selected average contract prices for three-year period

		Avg. Low Bid Unit Prices		
Item	Unit	1957	1958	1959
Exc, uncl rdwy	cy	$0.463	$0.468	$0.353
struct	cy	2.511	2.156	2.083
Borrow, imported	cy	0.262	0.262	0.284
Overhaul, cl A	sta yd	0.014	0.013	0.009
Bit matl, asphalt 100-120 pene	t	33.576	34.670	34.123
road mix	t	34.642	38.757	38.061
surface treatment	t	43.100	40.084	39.137
Bit surf, plant mix, type A	t	2.938	2.731	2.391
type B	t	3.282	2.966	2.866
concrete, type C	t	......	3.683	3.443
Scarify & mix, 24' wide	mi	782.131	800.029	788.063
Port cmt stab base crse, 7"	sy	0.317	0.365	......
cement for	sack	1.300	1.304	1.267

		Avg. Low Bid Unit Prices		
Item	Unit	1957	1958	1959
Grav surf, type B	t	$0.991	$0.830	$0.845
base course	t	0.837	0.791	0.770
Base course matl, sel	cy	0.731	0.539	0.817
Backfill, granular	cy	4.396	5.000	3.639
Cover matl, type A	t	3.847	3.922	3.928
Roll, tamp roller	hr	7.934	7.847	7.352
pneu tire or power	hr	7.046	7.534	8.193
Mechanical tamping	hr	6.412	6.801	6.462
Clear & grub	ac	68.142	191.475	261.035
Watering	Mgal	1.436	1.218	0.787
Steel, reinf	lb	0.151	0.139	0.145
struct	lb	0.237	0.212	0.235

(Continued on page 92)

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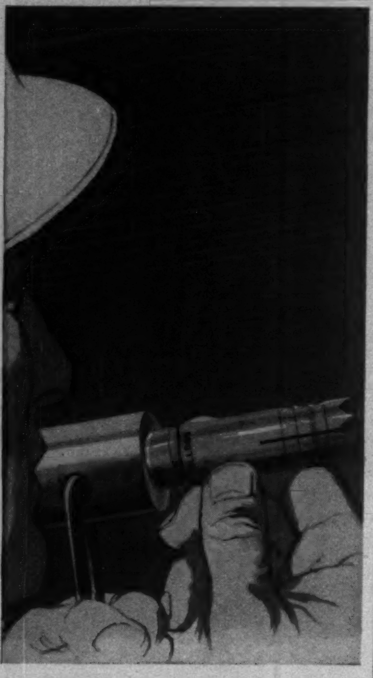

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. . . Utah Highway Prices, 1957-59

Item	Unit	Avg. Low Bid Unit Prices 1957	1958	1959
Concrete, cl A	cy	$70.816	$64.438	$69.160
cl AA	cy	94.813	92.249	84.875
cl B	cy	64.000	49.936	34.051
curb, type 1-E	lf	1.640	1.552	1.350
curb & gut, type 3 M	lf	2.337	2.406	2.304
pavement, 7"	sy	4.979	6.900	4.986
sidewalk, 4"	sy	3.617	4.295	3.953
Piles, treat timber	lf	2.720	3.000	3.550
untreated timber	lf	1.800	2.047	5.759
other than timber	lf	7.619	6.465	......
Surface ditch	lf	0.141	0.135	0.104
Exc, small ditches	cy	0.947	0.829	0.729
Riprap, loose	cy	3.261	2.298	4.352
Grd rail, deep beam with conc posts	lf	3.722	3.525	3.140
Guide posts	ea	7.954	7.564	7.616
R/w fence, type B	lf	0.336	0.345	0.348
met post	lf	0.400	0.370	0.354
Gates, 10"	ea	34.773	42.217	42.051
12"	ea	39.250	40.789	37.184
14"	ea	39.655	43.750	51.719
16"	ea	45.633	56.644	49.825
Lumber, treated	Mfbm	585.342	441.[illegible]94	379.231
Cor met pipe, 15"	lf	3.696	3.[illegible]43	3.658
18"	lf	4.672	4.217	4.301
24"	lf	6.340	6.267	6.389

Item	Unit	Avg. Low Bid Unit Prices 1957	1958	1959
Cor met pipe, 30"	lf	$7.766	$7.813	$7.508
36"	lf	12.235	12.488	11.976
48"	lf	17.644	16.792	17.210
CM pipe arch,				
22" x 13"	lf	4.511	4.231	4.823
29" x 18"	lf	7.470	6.545	6.770
RCP, 15"	lf	3.528	3.240	3.721
18"	lf	4.371	4.533	4.419
24"	lf	6.424	5.802	5.654
30"	lf	9.063	8.377	7.916
36"	lf	12.597	11.818	11.082
48"	lf	16.250	19.178	16.490
end sect, 24"	ea	70.000	58.454	80.587
36"	ea	150.000	124.000	151.100
Spec alk. resist pipe, tp A, if CMP is used, 15"	lf	2.457	4.200	......
18"	lf	5.129	4.917	5.000
24"	lf	8.062	7.265	7.267
30"	lf	9.893	9.049	8.717
36"	lf	15.504	14.158	14.741
48"	lf	21.300	19.956	20.582
CMP arch, 22 x 13"	lf	7.358	5.500	......
29 x 18"	lf	8.793	9.592	8.210
R/w markers	ea	8.366	8.222	7.614
FAP markers	ea	35.000	32.335	33.446
Motor grader	hr	9.455	11.481	10.250

West Virginia Highway Prices, 1957-59

These selected unit prices, based on contracts awarded reflect a general downward trend for the 3-year period.

Items	Unit	Average Unit Bid Prics 1957	1958	1959
Clear & grub	ac	$218.27	$350.14	$324 32
Excavation, uncl	cy	0.86	0.756	0.60
bridge	cy	2.03	1.13	0.80
borrow	cy	0.56	0.69	0.71
structural	cy	3.15	3.18	3.27
rock	cy	20.03	9.18	9.26
wet	cy	10.09	20.89	12.30
Scarify & manipulate	sy	0.086	0.13	0.10
Traf bound base crse aggregate, stone	t	3.77	5.89	10.00
Base course material,				
crusher run stone	t	3.48	3.24	3.34
gravel	t	3.37	4.09	3.15
str bed or pit grav	t	2.21	3 28	3.09
Prime coat aggregate	t	5.86	6.28	6.44
Bit material, tar	gal	0.26	0.26	0.25
asphalt, R.C	gal	0.20	0.21	0.20
Aggregate limestone surf treat	t	5.31a	7.20a	4.15b
Bit matl, asph emul	gal	0.172	0.17	0.16
Hydrated lime	t	28.84	30.93	33.47
Hot laid asph conc				
bottom course	t	9.94	10.38	10.07
wearing course	t	9.69	10.38	9.92
base course	t	8.75	11.00	9.74
Port cmt conc pave, 8"	sy	4.95	6.24	6.47
Transv exp jt matl	lf	0.42	0.39	0.28
Pavement reinforcement	lb	0.154	0.13	0.12
Dowel bars	lb	0.35	0.31	0.27
Tie bars	lb	0.35	0.31	0.31
Paved invert CMP, fully coated, 18"	lf	4.68	6.00	7.48c
24"	lf	6.85	7.93	6.92d
30"	lf	8.29	9.23	8.50d
36"	lf	12.84	14.17	12.79e
Reinf conc culv pipe,				
18"	lf	4.50	4.80	5.07
24"	lf	6.73	6.46	6.86
30"	lf	9.06	10.00	10.31
36"	lf	13.49	13.38	12.90

Items	Unit	Average Unit Bid Prices 1957	1958	1959
Piles, stl bearing, 10"	lf	$7.23	$5.96	$6.02
drive	lf	3.42	3.50	2.50
splice	ea	43.33	18.47	30.00
Riprap	cy	12.81	18.67	8.69
Slope protection	sy	...	6.32	6.35
Concrete, cl A	cy	62.97	58.76	54.85
superstruct	cy	67.54	68.26	63.33
substruct	cy	53.09	48.05	46.02
cl B	cy	51.30	54.86	49.56
Railing, concrete	lf	8.40	8.89	9.02
Steel reinf bars	lb	0.143	0.131	0.126
Dampproofing	sy	1.85	1.11	1.83
Helical CMP, perf & fully ctd, underdr, 6"	lf	1.82	1.58	2.14
RCP, perf 8"	lf	2.16	1.95	1.98
Cr stn, gravel or sand for underdrain	cy	6.40	5.99	6.29
Comb curb & gutter	lf	4.23	4.24	3.80
Integr conc curb	lf	1.62	1.54	1.59
Conc gutter	sy	7.54	6.38	6.05
sidewalk	sf	0.67	0.65	0.62
Drop inlet castings	ea	31.82	46.61	42.08
compl exc castings	ea	261.32	203.21	230.12
MH fr & cov castings	ea	54.25	58.59	53.60
compl exc castings	ea	513.02	410.73	408.91
Curb inlet castings	ea	72.00	77.50	65.41
compl exc castings	ea	405.88	218.00	281.20
Hillside drop inlets, compl with grating	ea	...	331.51	314.33
Stl beam grd rail, w/conc posts	lf	3.29	2.80	2.74
conc cribbing	cf	5.84	5.14	5.41
Special rock fill	cy	1.07	1.03	0.22
Water for compaction	Mgal	6.13	3.44	3.58
Project markers	ea	...	73.60	45.00
Woven wire fence	lf	...	0.90	0.65
Gnd agric limestone	t	...	17.26	16.38

a 160# per sq yd b 175# per sq yd c 12 gage d 14 gage e 12 & 14 gage

Composite Beam Bridge Bid Two Ways

Reconstruction of 1,803.2 ft of Rt. 63 at Huntsville, town of Canaan, Conn., includes construction of a composite beam bridge on steel piles over the Hollenbeck River, and bituminous concrete approaches. Bridge span is 72 ft. Roadway will be 24 ft wide, 8½ in. deep, with 8-ft shoulders.

The Connecticut State Highway Department award at $131,495 to John DeMichiel & Bros., Inc., Torrington, Conn. was on 2,808 welded stud shear connectors. Another alternate called for 5,800 lb of spiral shear connector bars. The three low bidders priced the connector bars at 50 cents per lb. The low bid of 60 cents for the welded stud shear connectors, placed by the third low contract bidder, was 10 cents under the price quoted by the other two.

Prevailing wages include: carpenter, $3.40; crane and power shovel operator, $3.65; common laborer, $2.35. The structural steel work has been sublet.

The six bids on this bridge job included:

1C	John DeMichiel & Bros., Inc., Torrington, Conn.	$131,495
2	Joseph Faitella, Plainville, Conn	132,431
3	The Costello Constr. Corp.; Newington, Conn.	133,641

(Continued on page 96)

JOBSITES CAN BE SWAMPED, TOO

And, like a sinking ship, your profit goes right to the bottom. Ridding your job of unwanted ground water is the specialty of the STANG Corporation. We can dewater your job site, regardless of its type or size, and bring your profit back to dry land.

JOHN W. **STANG** CORPORATION · 8221 ATLANTIC AVE. · BELL, CALIFORNIA
OMAHA · TACOMA · TULSA · MINNEAPOLIS · MOBILE · ST. PETERSBURG

If you use rear-dump haulers

Backed by better than 25 years of specialized experience in building off-highway earthmoving equipment exclusively, Euclid's modern rear-dump line incorporates advanced engineering that is a result of unmatched field experience. From the 10-ton Model R-10 to the big 55-ton "Euc" with two engines and a total of 672 h.p., Euclid Rear-Dumps are job proved to meet today's requirements for big performance. This greater dimension... in range of capacities, in choice of engines, transmissions and tire sizes, and in type of hauler... and in parts and service facilities of a world-wide dealer organization, too... can mean lower hauling costs and more work-ability on every one of your rear-dump jobs.

Have the Euclid dealer in your area give you facts and figures to compare with your own hauling costs... you'll find Euclid's greater dimension pays off in a better return on your investment. EUCLID Division of General Motors • Cleveland 17, Ohio

Payload capacities of 10, 15, 18, 22, 27, 40 and 55 tons... also semi-trailer models of 12, 22, 35 and 50 ton capacity.

When you compare Rear-Dump Haulers, check these 7 points...

- is maker experienced in the field... known for building a dependable, well-engineered product?
- does machine have required performance ability needed... capacity and speed for high production work, power and traction for rough going and steep grades?
- well-balanced for size of loading equipment... hoppers and controlled dumping needs?
- is there good parts and service availability... at both manufacturer and dealer level?
- are maintenance manuals, parts books and service literature complete... is machine designed for easy servicing?
- is machine easy to operate... convenient controls... good visibility... operator comfortable so that efficiency is maintained for entire shift?
- can required production be maintained at low cost... construction rugged enough to withstand heavy service with minimum maintenance?

Euclid Rear-Dumps meet every one of these important requirements... and more!

CIRCLE 94 ON READER SERVICE CARD

...check
EUCLID'S GREATER DIMENSION
EUCLID
1441

BIG POWER . . . BIG CAPACITY . . . BIG PERFORMANCE

Model R-27 has heaped capacity of 26½ yds. . . . rated payload is 54,000 lbs. . . . available with Cummins 335 h.p. or GM 336 h.p. engine . . . 4-speed Torqmatic Drive with converter lock-up and Torqmatic Brake . . . dual hydraulic booster steering . . . 18.00 x 25 tires on all wheels . . . rugged body with twin hoists . . . top speed with full payload, 34 mph. . . . available in two body types, standard for all-around use and quarry for hauling big rock.

ENGINEERED FOR EASY SERVICING

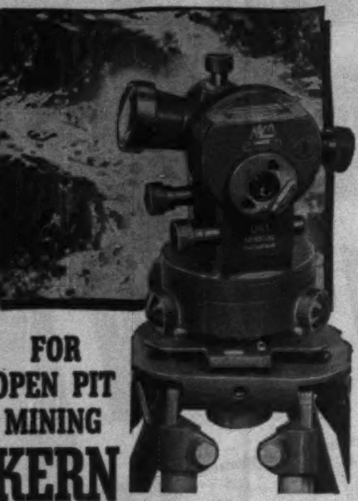
Like other Euclids, the R-27 is of simple, rugged design for years of dependable performance at minimum maintenance cost. When repair or replacement of major components is necessary, service-minded engineering saves time and money, too. For example, a transmission can be removed and replaced in just one-eighth the time required for the same work on a competitive hauler of the same capacity . . . engine replacement takes only one-half as many man-hours.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

KERN INSTRUMENTS
RIGHT
for the JOB



FOR
OPEN PIT
MINING
KERN
DKI THEODOLITE

Down-to-fundamentals design
. . . made for portability,
rugged use . . . Precision results
in simplest, quickest way.

Only 6 lbs. in weight, 7" high,
including carrying case.

READINGS at a GLANCE
- Fast, effortless operation.
- Direct to 10', Estimation to 1'.
- Automatically gives arithmetic mean of two readings at opposite circle points

FOR UNDERGROUND OPERATION
- Illuminated Traverse Targets easily interchanged with instrument.
- Water and dust-proof.
- Exceptional clarity of optical system—50% brighter image through Kern AR coating.

★

Write for Brochure DK 518-1
PROMPT, RELIABLE SERVICE
FACTORY TRAINED PERSONNEL
KERN and ONLY KERN
OFFERS YOU
the LATEST DESIGNS of
Dr. Henry Wild

Kern
SWISS
The FINEST in
SURVEYING
EQUIPMENT
KERN
INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.

. . . Composite Beam Bridge Bid Two Ways

Bids: 3-7-60			Unit Prices	
Items	Unit	Quantity	1C	2
Maintain & protect traffic	ls	job	$1,000	$2,000
Clear & grub	ls	job	3,500	3,500
Excavation, earth	cy	15,140	0.70	0.60
rock	cy	800	2.50	3.00
structural, complete	cy	925	4.25	4.00
Existing masonry, remove	cy	367	10.00	5.00
Excavation, trench 0-6' deep	cy	440	1.75	2.00
rock in trench, 0-6' deep	cy	25	9.00	8.00
trench, 0-10' deep	cy	30	3.00	3.00
ditch	cy	20	2.00	2.00
Reinf conc pipe, 15"	lf	112	3.90	4.00
18"	lf	80	4.15	5.00
ACCM pipe, 15"	lf	20	4.00	4.00
6"	lf	16	1.50	2.00
Underdr w perf ACCM pipe, 6"	lf	780	2.75	3.00
15"	lf	580	5.00	5.00
Outlet for underdr w 6" ACCMP	lf	50	2.00	2.00
Catch basin, type C	ea	5	200.00	210.00
Stl test pile, 12H53 35' long	ea	1	1,000	500.00
piles, furnish	lb	68,370	0.08	0.09
drive	lf	1,290	1.50	1.50
splice	ea	5	100.00	30.00
Conc, cl A	cy	8	70.00	75.00
bridge	cy	444	44.00	45.00
Preformed expansion jt filler for bridges, ¼"	sf	25	0.50	2.00
½"	sf	32	0.75	2.00
Steel bars, deformed	lb	44,180	0.115	0.14
structural	lb	131,500	0.14	0.15
Dampproofing	sy	192	1.00	1.00
Metal bridge rail	lf	161	6.00	8.00
Gravel fill	cy	20	2.00	3.00
Struct bkfl, pervious	cy	660	$1.50	$1.00
Subbase	cy	4,600	1.25	1.00
Subgrade, formation	sy	8,913	0.15	0.10
Base, broken stone for	t	1,100	3.20	3.50
rolled gravel for	cy	650	1.50	2.00
Bit mac base, broken stn for	t	1,000	4.30	4.25
conc binder course	t	390	9.00	10.00
Hot asph concrete	t	420	9.00	10.00
Bit mac pave, brkn stn for	t	630	4.50	4.50
bit matl for	gal	20,300	0.15	0.15
Traffic bound grav surf	cy	20	1.50	2.00
Calcium chlor, dust control	t	4	80.00	60.00
Water, dust control	Mgal	40	5.00	6.00
Shape & clean slopes	lf	1,923	0.75	1.00
Bit conc lip curbing	lf	2,050	0.50	0.50
Paved ditch	sy	40	3.50	5.00
Wire fence w wood posts	lf	1,000	0.75	0.65
Barway	ea	2	25.00	30.00
Guide railing, 2-cable	lf	1,400	1.55	1.50
Anchorage, type B	ea	2	35.00	40.00
type C	ea	2	35.00	40.00
Cmpnsting type	ea	10	35.00	40.00
Single post	ea	35	7.00	8.00
Riprap	t	1,690	3.25	3.00
Slope paving	sy	4	10.00	15.00
Loam, place	sy	950	0.50	0.50
Concrete marker post	ea	2	25.00	25.00
Alt. A—spiral shear conn bars	lb	5,800	0.50	0.50
Alt. B—welded stud shear connector, 7 in. (contract)	ea	2,808	0.70	0.70

Completion schedule: 230 cal days. Liq. dam: $50/day.

Oregon Interchange Is 2% Over Estimate

On a low bid 2% over the engineers estimate, Hannan Bros. Co., Portland, Ore., took this $230,091 Oregon State Highway Commission award for the construction of an interchange connection between the city of Eugene and the Eugene-Springfield Highway (Interstate 105).

The award was only 4% under the second low bid, but it was almost 25% under the high of five bids.

Over-all length of the project, a southbound off-ramp section at Ferry St., is 1,278 ft, of which 587 ft is a bridge of beam and girder deck design consisting of three steel and eight reinforced concrete spans. The structure will be 15 to 18 ft high, and all bents will be on spread footings except one which will be of steel piles driven through bridge end fill. Roadway width of the structure is 26 ft. Approach ramps will be of variable widths, a minimum of 26 ft from curb to curb.

Prevailing wages include: carpenter, $3.46; crane & power shovel operator, $3.81; tractor operator $3.55; concrete finisher, $3.48; common laborer, $2.75.

1C	Hannan Bros. Co., Portland, Ore	$230,091
2	Hamilton and Thoms, Inc., Eugene, Ore	240,397
5	C. H. Strong Engrg. & Constr. Co., Eugene	306,075
EE	State Highway Engineer, Salem, Ore	226,111

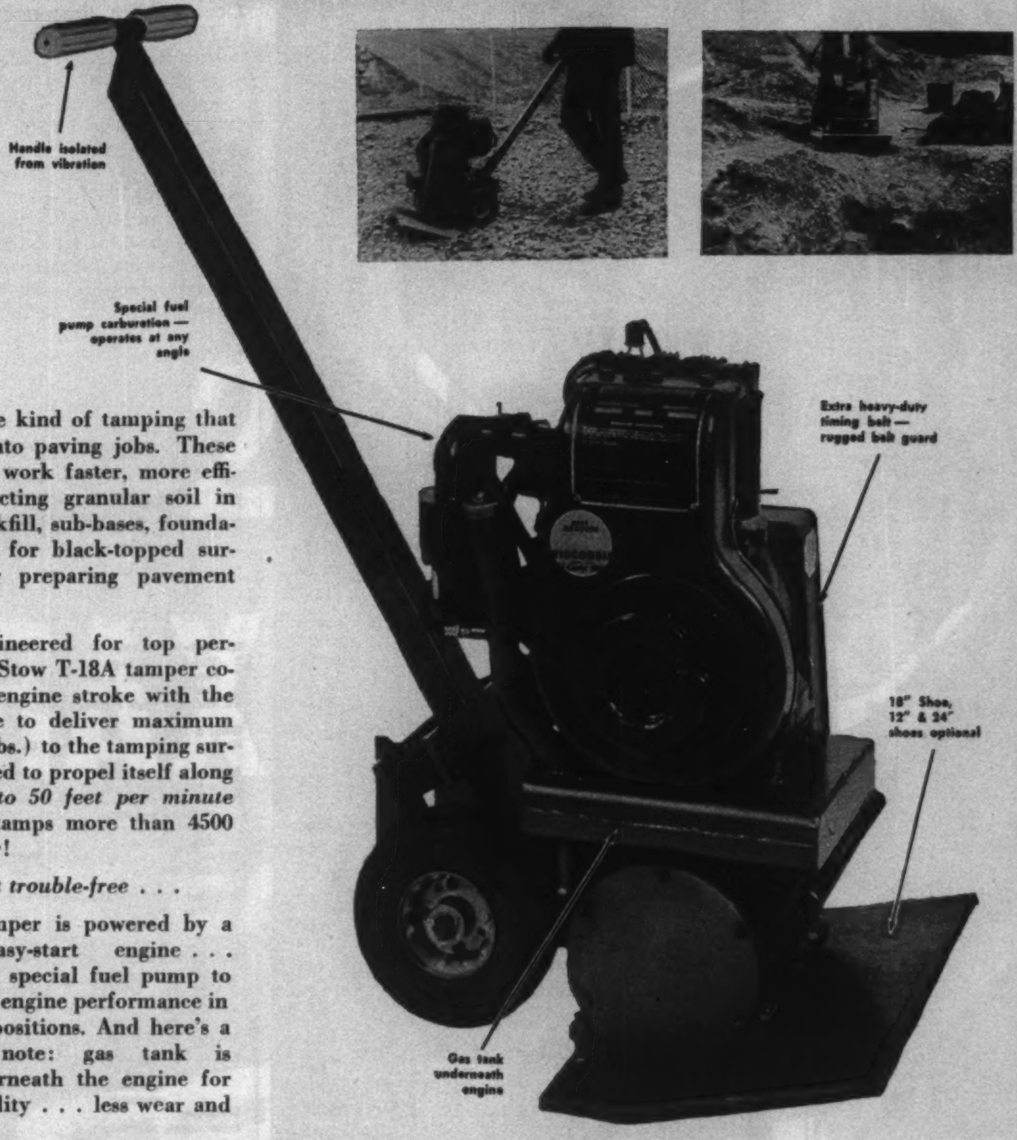
Bids: 3-1-60			Unit Prices	
Items	Unit	Quantity	1C	2
Remodel old bri & maint traf	ls	job	$4,000	$9,000
Shoring & cribbing	ls	job	5,000	10,000
Excavation, structural	cy	1,050	7.30	6.00
below elevation shown	cy	100	10.00	15.00
Steel piles, furnish	lf	140	4.25	4.50
drive	ea	4	100.00	100.00
splice	ea	2	50.00	50.00
Concrete, class A	ls	job	64,948	68,500
Metal reinforcement	ls	job	31,416	31,000
Structural steel	ls	job	34,223	35,000
Metal railing	lf	1,015	12.60	14.00
Handrail, salvage & reinstal.	lf	124	4.70	14.00
Steel pipe, standard 6"	lf	120	$9.00	$8.00
Concrete slab riprap	sy	60	7.50	7.00
Clear & grub	ls	job	4,100	4,000
Remove concrete & masonry	ls	job	3,320	2,000
Excavation, uncl drainage	cy	110	4.00	3.00
Embankment in place	cy	5,900	1.25	1.25
Topsoil, furn & place	cy	1,000	2.00	2.25
Roadbed & slopes, finish	ls	job	200.00	400.00
Sewer pipe, 8"	lf	300	2.00	1.75
12"	lf	390	3.00	2.50
18"	lf	22	4.50	4.50
Pipe under pavement, extra for	lf	18	4.00	5.00
Concrete manholes	ea	2	300.00	300.00
adjust	ea	1	50.00	25.00
inlets, type G 1	ea	6	110.00	100.00
curbs	cy	38	45.00	55.00
curb & gutter	cy	90	47.00	55.00
walks & surfacing	sy	160	4.50	4.00
in islands	cy	9	40.00	60.00
Metal guard rail	lf	330	2.70	3.50
Base, coarse crushed matl	cy	1,800	2.75	2.50
¾" O matl	cy	200	2.75	2.50
Sprinkling	Mgal	45	4.40	4.00
Base preparation	ls	job	220.00	200.00
Binder crse, ¾" O matl	cy	24	4.40	4.00
Asphalt, R. C 3	t	4	50.00	45.00
concrete, class B	t	700	6.90	6.25
class C	t	22	6.90	6.25
Galv steel pipe, ½"	lf	350	0.65	0.25
¾"	lf	900	0.73	0.40
1"	lf	920	0.88	0.50
1¼"	lf	550	1.02	0.60
1½"	lf	430	1.13	0.95
2"	lf	550	1.45	1.00
2½"	lf	300	1.85	1.25
Control valves, 1½" section	ea	2	12.65	30.00
2" section	ea	5	18.15	40.00
Drain valve, ½"	ea	15	11.55	2.25
Sprinkler heads, pop up, nonrevolving	ea	96	2.50	4.00
shrubbery	ea	70	1.21	0.85
Trees, furnish & plant	ea	32	9.70	9.00
Shrubs, furnish & plant	ea	410	3.40	3.00
Vines, furnish & plant	ea	4,500	0.32	0.35
Lawn, construct	ac	0.6	1,650	1,370
Grass seed, Highland bentgrass	lb	40	0.44	1.00
creeping red fescue	lb	66	0.61	0.80
Organic fertilizer, 5 3 2	cwt	8	5.50	10.00
Inorganic fertilizer, 10 16 8	cwt	5	6.05	5.00
Sawdust	Unit	25	17.60	10.00
Remov exist sign installations	ls	job	119.00	108.00
Overhd sign structures	ls	job	4,510	4,041
Sign posts, wood	ls	job	459.00	417.00
Signs, type A	sf	429	10.38	9.44
type C & D	sf	103	4.90	4.45
type E, F & G	sf	15	6.10	5.55
Rdwy & sign illum installn	ls	job	6,480	5,000

Completion schedule: 130 working days.
Liquidated damages: $125/day

(Unit prices contd. on p. 98)

4500 sq. ft. per hour . . .

That's TAMPING, brother!


Handle isolated from vibration
Special fuel pump carburetion — operates at any angle
Extra heavy-duty timing belt — rugged belt guard
18" Shoe, 12" & 24" shoes optional
Gas tank underneath engine

. . . That's the kind of tamping that packs profit into paving jobs. These Stow tampers work faster, more efficiently compacting granular soil in trenching, backfill, sub-bases, foundations. Perfect for black-topped surfaces and for preparing pavement patches, too.

Precision engineered for top performance, the Stow T-18A tamper coordinates the engine stroke with the vibrator stroke to deliver maximum impact (2200 lbs.) to the tamping surface; is designed to propel itself along at speeds *up to 50 feet per minute* . . . while it tamps more than 4500 sq. ft. per hour!

And talk about trouble-free . . .

The Stow Tamper is powered by a Wisconsin easy-start engine . . . equipped with special fuel pump to insure efficient engine performance in all operating positions. And here's a maintenance note: gas tank is mounted underneath the engine for maximum rigidity . . . less wear and tear!

Like we said . . . "That's tamping!"

Try this revolutionary Stow Tamper on your next job. Your local distributor will be glad to arrange an on-the-job demonstration!

Remember Stow T-18A Tamper compacts FASTER, MORE EFFICIENTLY, WITH LESS WEAR AND TEAR.

Call your nearest Distributor or send in the coupon, TODAY! →

STOW MANUFACTURING COMPANY
Dept. M-1, 19 Shear St., Binghamton, N. Y.

Please send me Tamper Bulletin 593.

NAME . . . . **TITLE** . . . .
COMPANY . . . .
STREET . . . .
CITY . . . . **STATE** . . . .

Bid-winning contractors depend on Ramset

TO CUT FASTENING TIME AND COST

INSIST ON THE
RED TIP FASTENER WITH THE W TOP

Chop fastening costs 20% - 30% - up to 80% with Ramset, the finest in powder-actuated fastening! Savings like this can help you bid lower and get more business . . . do every job quicker and better with Ramset, the split-second way to set fasteners into concrete or steel without heavy equipment or tedious pre-drilling.

Ramset's complete selection of powder charges and austempered Red Tip fasteners assure the "right" combination for any job . . . no more paying for excess power or fastener size - you just buy what you need! Your Ramset dealer will help you work out the most economical solution to your fastening problems. Call him (under "Tools" in Yellow Pages) or write us direct for helpful literature.

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OLIN MATHIESON • WINCHESTER-WESTERN DIV. • 287-F WINCHESTER AVE. • NEW HAVEN 4, CONN.

Michigan Road Paving Draws Wide Bid Spread

This 18.7 miles of variable-width bituminous concrete wearing course, on three sections of U.S. 12 in Berrien County, Mich, drew seven bids.

The Michigan State Highway Department, Lansing, awarded the contract at $298,787, to Rieth-Riley Construction Co., Battle Creek, Mich., on a low bid 19% under the engineers estimate, 6% under the second low bid, but 22% and 37%, respectively, below the two high bids.

Work includes surfacing of the existing 40- and 42-ft roadway, including bridges, with bituminous bond coat, and bituminous concrete wearing course about 1½ in. thick, at an estimated 160 lb per sq yd. Bituminous material for mix must be 60-70 penetration. Shoulders, estimated at 2 in. thick by 8 ft wide, will be placed along designated sections of the project.

Traffic must be maintained throughout the project at contract unit price per mile, which includes all necessary materials, equipment and labor.

Prevailing wages include: crane & power shovel operators, $3.48; tractor operator, $3.48; common laborer, $2.36.

The bidding included:

1C	Rieth-Riley Constr. Co., Battle Creek, Mich.	$298,787
2	Mid-America Engr. Corp., Skokie, Mich.	319,027
7	Peninsula Asph. & Constr. Co., Traverse City, Mich.	474,723
EE	Michigan State Highway Dept., Lansing	369,982

Bids: 3-1-60 Items	Unit	Quantity	Unit Prices 1C
Asph surface, remove	sy	56	$1.00
Catch basin covers, adjust	ea	28	35.00
Bit bond coat AE-2	gal	69,459	0.15
conc wearing course	t	37,044	7.02
Calcium chloride admixed	t	56	45.00
Shoulders, class A	t	18,580	1.21
Water	Mgal	41.1	10.00
Maintain traffic	mi	18.7	100.00

Awarded: 3-30-60. Commence: 4-10-60. Complete: 10-15-60.

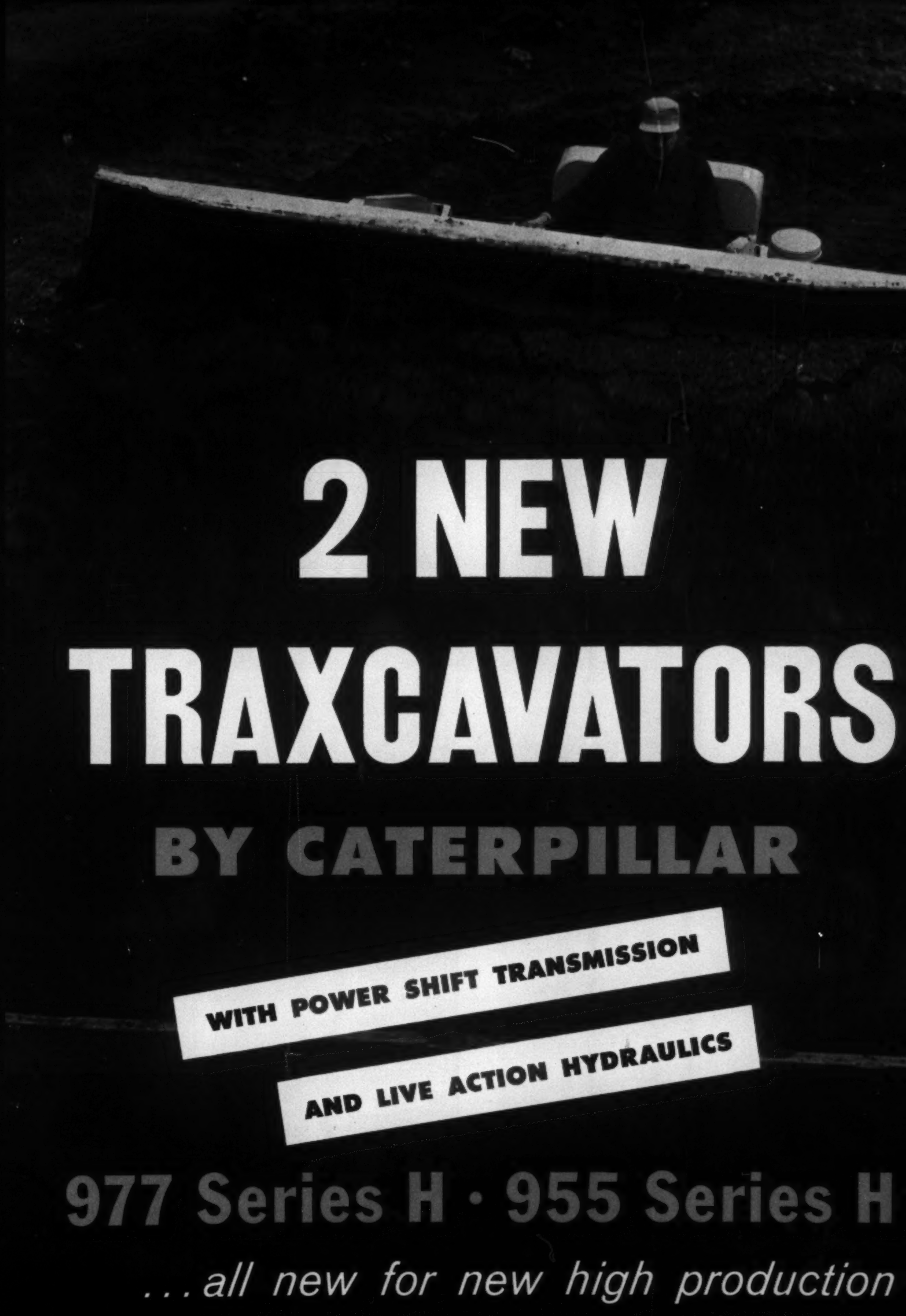
Louisiana Highway Prices Fiscal Year Ended 6-30-59

Selected major items	Unit	Avg. Unit Prices Rural	Urban
Excavation, common	cy	$0.36	$0.6
borrow	cy	0.54	1.67
structural	cy	4.84	5.3
overhaul	sta yd	0.005	0.01
Watering	Mgal	2.45	2.67
Base course, soil cement, 8"	sy	1.15	....
6"	sy	....	1.2
Surf crse, sand, clay, gravel	cy	4.65	4.0
Bituminous primer	gal	0.17	0.1
Asphalt cement	gal	0.17	0.1
Aggr, crse, fine, seal coat	cy	6.58	8.43
Conc pavement, 8" uniform	sy	5.25	4.9
Bituminous hot mix	t	8.33	6.8
Tack coat	gal	0.18	0.2
Concrete, class A	cy	54.32	62.2
Steel, deformed reinf	lb	0.13	0.1
structural	lb	0.17	0.1
Prcst conc piles, 14"	lf	8.10	4.6
16"	lf	8.60	8.41
Conc piles, cast in place, 14"	lf	7.00	4.8
approach slabs	sy	10.36	9.7
Guardrail	lf	4.38	4.37
Right of way markers	ea	6.08	7.4
Catch basins, manholes, inlets etc	ea	290.00	300.0
Curb & gutter, all types	lf	2.75	2.8
Conc curb, all types	lf	1.33	0.8

(*Unit Prices contd on p. 103*)

←CIRCLE 98 ON READER SERVICE CARD

CIRCLE 99 ON READER SERVICE CARD→


2 NEW
TRAXCAVATORS
BY CATERPILLAR
WITH POWER SHIFT TRANSMISSION
AND LIVE ACTION HYDRAULICS
977 Series H · 955 Series H
...all new for new high production

FASTER loads . . . lifts . . . hauls . . .

New Cat Series H Traxcavators!

There *is* a way to beat higher costs—and that's with increased production. For tractor-loader jobs, here's your answer in the new Caterpillar 977H and 955H Traxcavators. Designed to set a production pace far faster than the models they replace and any other tractor-loaders of comparable size, they're milestones in tractor-loader progress. With Cat power shift transmission and Live Action Hydraulics, they're machines that never stop. Look at the action pictures here and you'll see why. That's the 150 HP 977H with its 2½ cu. yd. bucket working. The 100 HP 955H with its 1¾ cu. yd. bucket is equally spectacular. Listed here are some of the features that make these machines the fastest working tractor-loaders ever built. For complete details, see your Caterpillar Dealer.

.00 sec.

READY TO GO. With the range selector in low, the operator has only to use the power shift lever for split-second changes of speed and direction. Between the range selector and the power shift lever, the new 977H has 4 speeds forward and 4 faster in reverse. However, for the average job, only the power shift becomes the operating lever. Automatic tilt control has positioned the 2½ cu. yd. bucket for digging.

4.2 sec.

FASTER LOADING. With 150 HP at the flywheel and an operating weight of 36,270 lb., the 977H develops up to 72,000 lb. push at converter stall without stalling the engine—push aplenty to break out big loads. Live Action Hydraulics deliver increased digging power to operate the bucket with greater speed and force for faster loads. The material here is an earth and gravel mixture, up to one inch in size.

13.2 sec.

FASTER HAULING. Using a light touch on the power shift lever to reverse instantly and pick up haul speeds, the operator returns at 4.0 average MPH over a total distance of 48 feet to the truck. Because the new 977H is heavier than the previous model and its center of gravity is 10% further to the rear, it has greater stability to handle with ease the heavier loads in the new 2½ cu. yd. bucket.

dumps . . . cycles!

18.0 sec.

FASTER DUMPING. The 977's bucket reach of 39½" at 9' 4" dump height easily clears this 7' 8" high, 10 cu. yd. truck. With this reach, the operator can cast the load where he wants it without time-wasting jockeying. Automatic kick out on the lift controls further reduces bucket maneuvering time. Dumping completed, the operator moves the power shift lever for instant return toward another load.

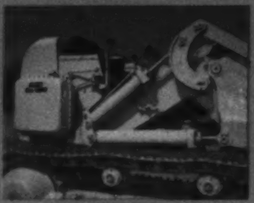
26.4 sec.

FASTER RETURN. With a return time of 8.4 sec., the total cycle time for the 977 was 26.4 sec. In a typical job study, the average cycle time per truck load was 117.6 sec. In 60 minutes the 977H loaded 30.6 trucks with a total of 306 cu. yd. This is typical of the outstanding performance you can expect from the 977H—and, in its capacity, from the 955H. Nothing in their size range can match the Traxcavators that never stop for fast cycles and high production!

NEW POWER SHIFT TRANSMISSION

One lever—that's right, one lever gives split-second changes in speed or direction to slash cycle times and increase operator efficiency. This Caterpillar exclusive was designed especially for the 977H and the 955H.

NEW LIVE ACTION HYDRAULICS



Another Caterpillar first. Live Action Hydraulics provide faster lifting speed and greater lifting capacity without robbing power from the tracks. The 977H packs 41% more hydraulic lifting power—955H, 23% more than former models.

MORE HORSEPOWER WITH NEW CAT TURBOCHARGED ENGINES

Up 50% on the 977H—its new Cat D333 Engine develops 150 HP at the flywheel. Up 43% on the 955H with a new Cat D330 Engine that develops 100 flywheel HP.

NEW INCREASED BUCKET CAPACITY

An 11% increase on the 977H with new 2½-cu.-yd. bucket—and a 16.6% increase on the 955H with new 1¾-cu.-yd. bucket. To handle the heavier loads, bucket linkage on both machines has been strengthened.

NEW HEAVY-DUTY UNDERCARRIAGE

Built to stand up under the toughest jobs, the new undercarriage on both machines features larger, stronger track components that also increase stability . . . lifetime lubricated rollers that need no lubrication until rebuilding . . . and track guiding guards welded to the roller frame for positive track alignment. The 955H also features a new 6-roller track frame.

FAST TRAVEL SPEEDS

977H . . . Forward		955H . . . Forward	
Low	High	Low	High
2.0 MPH 1st	2.5 MPH 1st	2.1 MPH 1st	2.7 MPH 1st
3.6 MPH 2nd	4.7 MPH 2nd	3.9 MPH 2nd	4.9 MPH 2nd

Reverse speeds 25% faster than forward

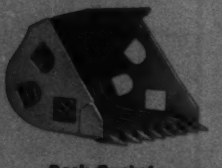
MORE HIGH PRODUCTION FEATURES

Other features on both machines include a new, two-cylinder high-speed gasoline starting engine for positive starts in any weather . . . and a new, dry-type air cleaner that removes 99.8% of all dirt from intake air even in the worst dust conditions, cuts maintenance time as much as 75%. Retained features include 40° bucket tilt back . . . automatic bucket positioners and kick out . . . 3-grouser track shoes . . . and quick-change attachments that multiply the machines' usefulness.

PACE-SETTING POWER PLUS VERSATILITY

in the new Cat Series H Traxcavators

SIDE DUMP BUCKET Directly interchangeable with the standard bucket, the side dump bucket provides increased versatility for Series H Traxcavators. It eliminates turning and requires less loading space—to sum up, lowers cycle times for even greater production. Capacities: 977H—2⅝ cu. yd.; 955H—1¾ cu. yd.



Rock Bucket

Quarry Bucket

Bulldozer

Fork

Ripper

You've seen how increased horsepower, power shift transmission and Live Action Hydraulics make the new 977 and 955 Series H Traxcavators the fastest working tractor-loaders in the field. That means higher production for you not just on one job application, but on many—because of the many attachments available with both machines. Bar none, Traxcavators are the most useful machines you can own. With attachments, you can always keep them working—and working *profitably*.

Have you checked your equipment line-up recently? There may be machines in it that are no longer paying their way—or not earning *all* the profits they should in light of today's more efficient units. A comparison of your existing tractor-loaders with the new Series H Traxcavators might easily prove these new machines would increase your output and profits far more than you imagine.

Get the down-to-earth facts about the new Series H Traxcavators from your Caterpillar Dealer. Better still, ask for a demonstration. See for yourself how they set a new production pace on the toughest kind of job!

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

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BORN OF RESEARCH
PROVED IN THE FIELD

Narrows Bridge Piers Awarded at $16.2 Million

J. Rich Steers, Inc., bidding jointly with Frederick Snare Corp., both of New York City, placed the successful low bid of $16,227,975, with the Triborough Bridge and Tunnel Authority, for the two 129 x 229 ft granite-faced concrete piers to be constructed on deep open dredged tremie sealed caissons, to support the main towers of the Narrows Bridge between Brooklyn and Staten Island, New York. Ammann & Whitney, New York City, is the consultant.

Joseph F. Vermaelen is director of construction and maintenance of the Triborough Authority, which has taken over full financing of the $320-million bridge from the Port of New York Authority.

The 12-lane, double deck bridge, will have a 4,260 ft suspension span, the longest in the world.

The caissons account for about 46% of the total cost, $5,573,475 going for 155,250 cu yd of concrete at $35.90 a yd in place, including bar reinforcement; $600,000 for structural steel, and $1,428,480 for excavation and sinking of the caissons (297,600 cu yd at $4.80 a yd.).

Tremie concrete must attain a compressive strength of 3,000 psi. Concrete in caisson must attain a compressive strength of 2,500 and 3,000 psi, and in precast well covers and distribution slab, 3,000 psi.

Prevailing wages in New York City include: structural iron workers, $5.07; hoisting engineer, $5.02; carpenter, $4.75; tractor operator, $4.345; power crane & shovel operators, $5.29; common laborer, $3.56. All include fringe benefits.

1C	J. Rich Steers & Frederick Snare Corp., N. Y. C	$16,227,975
2	Merritt-Chapman & Scott Corp., N. Y. C	17,702,090
4	Johnson, Drake & Piper, The Conduit & Fndn. Corp., Winston Bros Co., Cayuga Constr. Corp., Spearin, Preston & Burrows, Inc., N. Y. C., a joint venture	21,350,362

Bids: 12-16-59 Items	Unit	Quantity	Unit Prices 1C	2
Demol Ft Lafayette & salv exist facil	ls	job	$900,000	$1,000,000
Prep site & clean up after completion	ls	job	2,622,000	2,454,800
Exc & sink caisson	cy	297,600	4.80	6.50
Cement, portland	bbl	318,800	4.50	5.00
natural	bbl	6,160	5.00	7.00
Retarder densifier	lb	534,000	0.08	0.07
Tremie seal concrete	cy	31,060	25.00	14.00
Conc in caisson, incl bar reinf, in place	cy	155,250	35.90	47.00
Pcst conc well covers, in place	ls	job	200,000	100,000
Conc in distr slab	cy	9,280	30.00	15.00
Granite masonry-faced pier pedestals	cy	25,900	70.00	50.00
Bar reinf for distr slab & gran-fced pier pedestals, in pl	lb	2,160,000	0.20	0.17
Struct stl in caisson, in pl	ls	job	600,000	900,000
Temp beacons, furn & instal 2	ls	job	32,000	35,000
Perf & payment bonds	ls	job	64,000	70,000

Completion schedule: Brooklyn pier, 790 cal days. Staten Island pier, 610 cal days. Liq. dam.: $10,000/day

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now is the time to properly light your construction hazards

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It's Summer . . . more highway projects . . . more traffic, too!

Whatever the season, wherever the road . . . it's always the right time to adequately light your highway hazards. Protect the public and you protect yourself.

NEW! DIETZ HAZARD WARNING PLANNER

A Practical On-the-Job Tool! Quickly and easily shows how, when, and where to use each type of warning light for maximum safety under all weather conditions and all types of roads and speeds.

Send $1. for each Planner — personalized with your name

LANTERNS TORCHES VISI-FLASH

Use Dietz Visi-Flash Lights to alert the oncoming driver. Brightest, safest, most trouble-free flashers on the market. Warn: "Danger Ahead" for up to 1500 hours without changing batteries.

Use Dietz Lanterns to locate hazard in relation to driver's position. Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use Dietz Torches to guide driver around the hazard. Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene.

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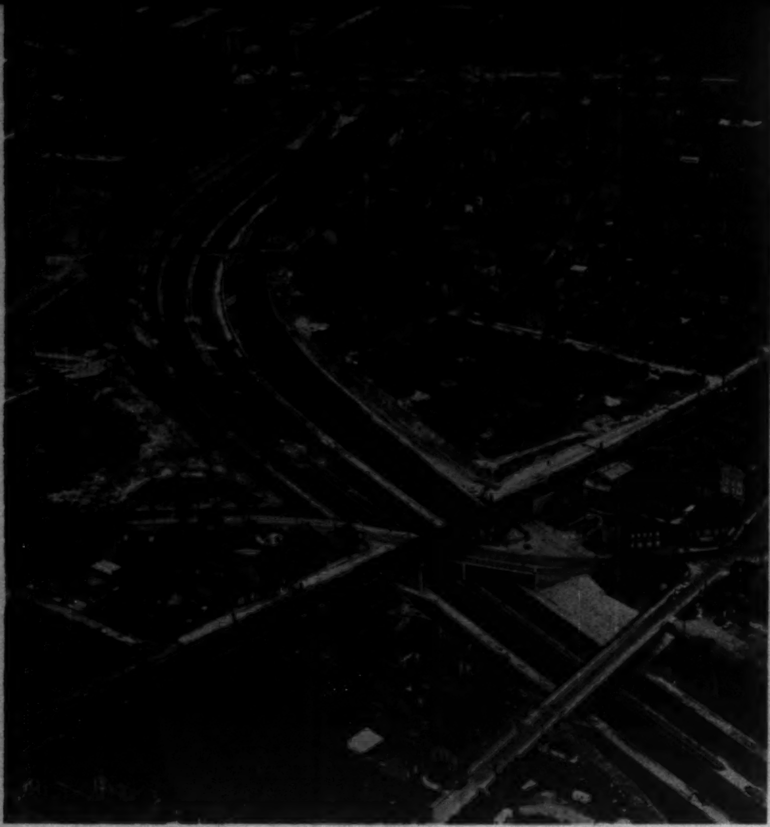
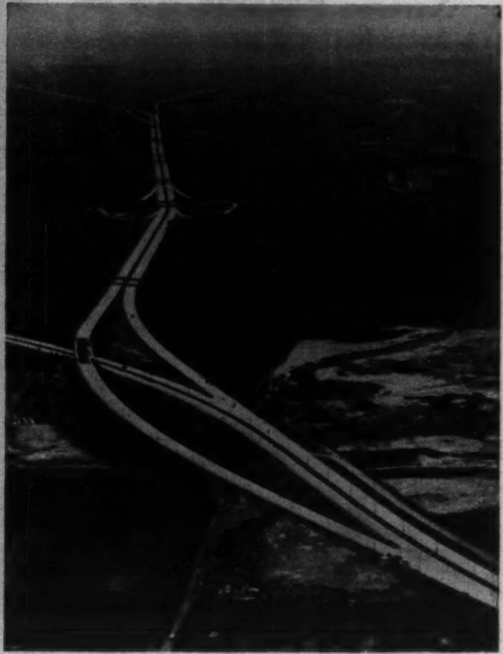
Go DIETZ *and you go Safely*

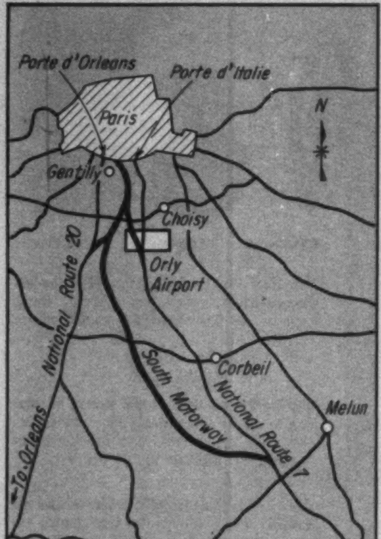


SOUTH MOTORWAY LEAVES PARIS at a junction with a new peripheral boulevard (top) and passes through suburb of Gentilly in a cut.



MOTORWAY BRANCH TO ORLY AIRPORT (left) will serve air travelers, while main line continues on south.

France's Newest Superhighway



PARIS EXITS SOUTHWARD are much improved by addition of new Motorway.

France's second superhighway opened to traffic last month. It runs 26 miles from Gentilly, on the southern edge of Paris, to Corbeil, near Fontainebleau.

Called Autoroute du Sud (South Motorway), it will eventually be continued to Lyon and Marseille.

The main line of the motorway skirts Orly Airport to the west, but a three-mile branch extends into the terminal area. There is also another short branch that connect with the main highway south to Orleans.

Traffic on the new superhighway is now about 40,000 vehicles a day, with 50,000 expected during the summer vacation months.

Total cost of the construction, including expropriation and rehousing, was over $38 million.

The only other superhighway in France is the 19-mile Autoroute de l'Ouest, out of Paris, although there are a few miles of such road south of Lille and another short stretch north of Marseille.

When the branch of France's new South Motorway reaches Paris' Orly Airport it becomes a part of a highway system designed to serve an airport layout 2½ times as large as the present one of 2,000 acres. To permit this enlargement of the field—envisioned in a master plan drawn up a half dozen years ago (ENR Oct 27, 1955, p. 34)—a main national highway had to be relocated and depressed for a distance of 2.4 miles through the airport site, routed beneath a new seven-story terminal building and its esplanade and integrated with the traffic facilities provided by the South Motorway. The result has been a design and construction job of major proportions.

Orly Airport dates from World War I days, when it was a military field. Located between the Seine River on the east and national highway route 7 on the west, Orly was expanded as much as possible in a north-south direction, but when it became a great international airport after World War II, the only area available for additional runways was to the west on the opposite side of highway 7. Such an important traffic artery could not be abandoned, and it was impracticable to route it around the field. The decision was taken to depress it across the site. A new alignment was chosen so as to keep the airport portion of the old highway in service until the new one was completed.

Since this new route for highway 7

EXPANDED ORLY AIRPORT is bisected by national highway route 7, requiring lengthened runways and taxiways (left center) to be carried across on bridges. New multi-story terminal building is in center of photo.

Passes By and Under Orly Field

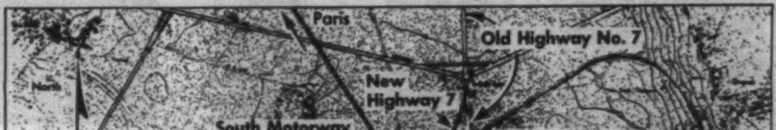
bisected the expanded field, with a pattern of runways on each side of it, all intra-airport service roads and an airplane taxiway had to be carried across the highway on bridges. The same was true for an extension of the main east-west runway, whose bridge has the remarkable width of 1,020 ft, virtually converting highway 7 and a parallel service road into a twin-box tunnel.

The bridge consists of two-span (110 and 52 ft) prestressed concrete rigid frames spaced 11½ ft apart. The extreme width was required to furnish ample safety "shoulders" for the 200-ft-wide runway.

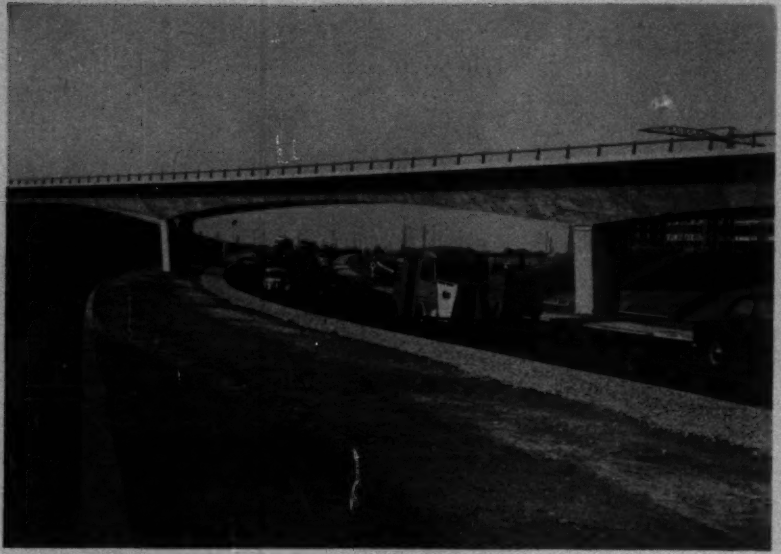
Similarly, a 984 ft "tunnel" carries the highway beneath the new terminal building whose logical location was between the two runway layouts and thus athwart the highway alignment. This "tunnel" also encompasses an esplanade across the highway in front of the terminal building and an aircraft parking apron behind it.

Finally, since the Orly branch of the new South Motorway had to be brought to turning circles at the north front of this terminal building, its alignment across the field was made parallel and adjacent to highway 7.

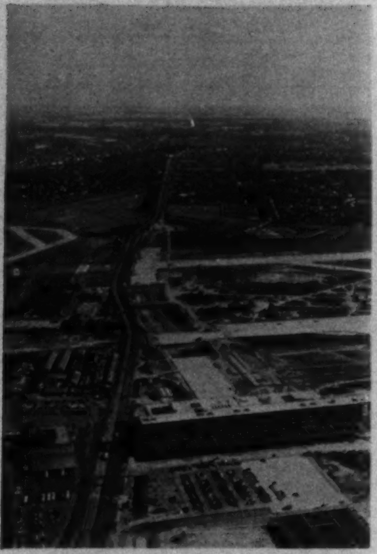
(*Turn the page*)



PRESENT AND FUTURE LAYOUT of Orly Airport. New alignment of highway route 7 across the site is on the same right-of-way as the South Motorway.



NOVEL BRIDGE, with V-shaped piers and flared girders that suggest airplane wings, carries Paris-bound traffic on South Motorway across highway 7.



ORLY TERMINAL BUILDING straddles the depressed highways. View looks south.

ALUMINUM GRILLS are installed over tunnel portals to provide a gradual transition between daylight and artificial illumination.

ACOUSTICAL TREATMENT in the highway tunnels is provided by special perforated aluminum and plastic elements.

The actual arrangement adopted was to spread the divided roadways of the Motorway far enough apart to accommodate highway 7, and two bicycle roadways that border it, in the center. All of these facilities—the two 23-ft roadways of the Motorway, the two 8-ft bicycle paths, the 46-ft undivided roadway of highway 7 (with 7-ft sidewalks on either side) and the necessary dividing strips and shoulders—required a cut 190 ft wide at the bottom, and measuring 270 ft between the tops of its side slopes.

In total, the cut is spanned by 14 concrete bridges and the terminal building. Most are of rigid frame type with slab and girder decks, although a special design was adopted for the three-span structure that carries the northbound lanes of the Motorway over highway 7 at the north edge of the field. Since the two piers had to be located so as not to obstruct motorists' vision in the sidewalk space either side of the highway, a narrow base was desirable. The piers were thus made in the shape of a V. In addition, the underside of the bridge deck is flared outward to the edges in a continuation of this V-shape, giving an appearance that has been likened to the wings of an airplane. The deck is 38 ft wide, and the spans are 125-175-125 ft.

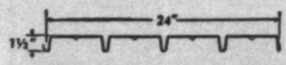
The two so-called tunnels on highway 7—where it passes under the terminal building and under the main east-west runway—were also the object of special design efforts, especially in the interest of safety. Thus while asphalt paving is used elsewhere, concrete is used in the tunnels to provide greater light reflection. Also, at the portals of the tunnels canopies of aluminum grillwork, called "paralumes," extend outward a distance of 150 ft to provide a transition from daylight to the artificially lighted tunnels.

The tunnel under the terminal building is also acoustically treated and artificially ventilated. Noise reduction is effected by a series of hollow aluminum "beams" attached to the ceiling and containing so-called "resonance boxes" made of plastic.

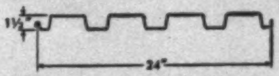
Perforations in the sides of the aluminum beams admit the noise into the resonance boxes, (which also are perforated) where it is muffled. In the ventilation system, fresh air is blown in transversely from wall ducts, while the vitiated air is exhausted by the piston action of traffic or by the natural air currents from the portals.

Most of these new highway facilities are now in service. The terminal building should be ready for occupancy next year. After that further developments—principally more runways and hangars—can be carried out as needed and without any disruption of normal airport operations.

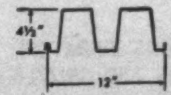
When it comes to roof systems, INLAND covers everything!



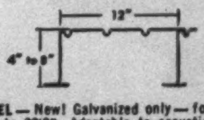
A-DECK — For purlin spacings not exceeding 8'4". Narrow ribs provide deck surface that supports the thinnest or softest type of insulation.



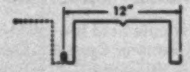
B-DECK — For spans to 10'0". Wide rib distributes metal for greater structural efficiency — gives higher section properties per pound of steel — well suited for use as side wall panels.



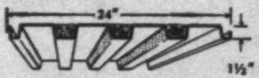
C-DECK—Carries normal roof loads over spans up to 24'0". Used extensively in canopies.



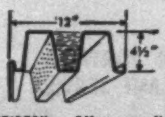
T-STEEL — New! Galvanized only — for clear spans to 32'0". Adaptable to acoustical and flush, luminous ceiling treatments. Provides superior diaphragm to transmit seismic and wind loads.



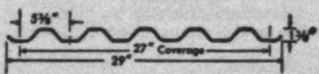
H-DECK — New! For simple spans from 10'0" to 20'0" — 3 and 4½" depths. Especially practical to cover walkways in shopping centers, schools, other installations.



B-ACOUSTIDECK — Two-in-one panel combines steel roof deck with acoustical ceiling having Noise-Reduction Coefficient of .70 — used for spans to 10'0".



C-ACOUSTIDECK — Offers same Noise-Reduction Coefficient as B-Acoustideck. Can be used for spans to 24'0".



RIBFORM — High tensile galvanized steel form for concrete slabs over spans up to 8'0". Three types: Standard, Heavy-Duty, Super-Duty.

Whether your design calls for a dry insulation board roof or for wet-fill, there's an Inland roof system for the job — by the makers of famous Milcor steel building products.

Inland steel deck weighs less than half as much as poured-in-place or pre-cast construction. You can space joists wider and use lighter framework, to save both time and money. Panels are easy to handle and weld in place — in any weather that a man can work.

Types A, B, C, and H decks have the additional advantage of a Bonderized, baked-enamel prime finish that resists on-the-job damage. One field coat of paint on these Inland decks usually covers.

Write for catalogs 240, 241, and 245 — or see Sweet's sections 2c/Inl, 11a/In, and 2a/In.

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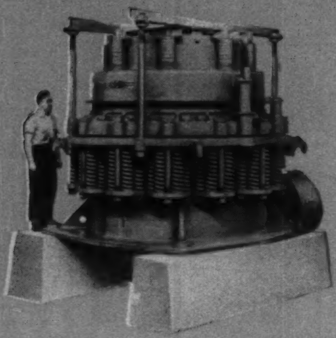
SYMONS® PRIMARY GYRATORY CRUSHERS

These gyratory crushers are built for big tonnage, heavy duty primary breaking in 30", 42", 48", 54", 60" and 72" feed opening sizes, for capacities up to 3500 or more tons per hour.

SYMONS INTERMEDIATE CONE CRUSHERS

General duty machines for producing large quantities of product material with a minimum of fines, from fairly uniform feed, requiring a reduction of only one or two sizes. Available with 22" and 30" crushing heads, in capacities to 100 tons per hour.

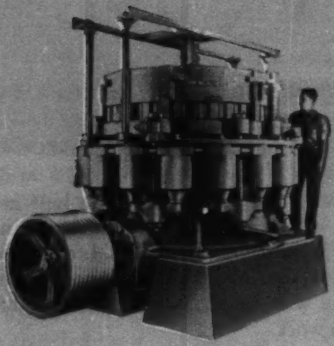


SYMONS CONE CRUSHERS

For secondary and finer reductions, Symons Cone Crushers, in both Standard and Short Head types, are built in sizes ranging from 22" to 7' in diameter, for capacities from 6 to 900 or more tons per hour.

NORDBERG GRINDING MILLS KILNS AND COOLERS

To meet specified conditions for wet or dry processing in the manufacture of cement and numerous other processes where friable material must be comminuted to fine sizes. Mills include Rod, Ball, Pebble, Tube and Compartment types in sizes from 6' to 13' diameter and up to 50' in length.



NORDBERG GYRADISC® CRUSHERS

Built to supplement the world-renowned Symons Cone Crushers, the Nordberg Gyradisc provides a medium for the profitable production of sand sizes of specification material.

NORDBERG ENGINES

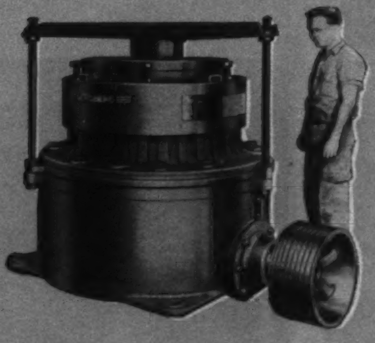
Ranging from small "packaged" power units to large stationary engines for base load and standby power, Nordberg engines are built in a wide range of types for Diesel, Duafuel® and Spark-Ignition Gas operation, in sizes to over 11,000 horsepower.

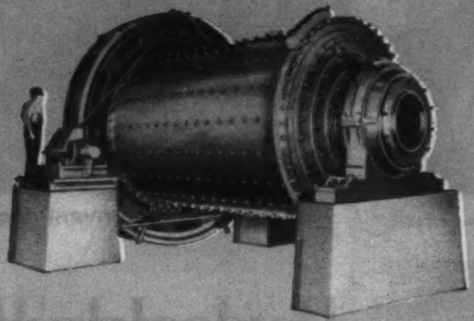
IN PORTABLE PLANT SERVICE

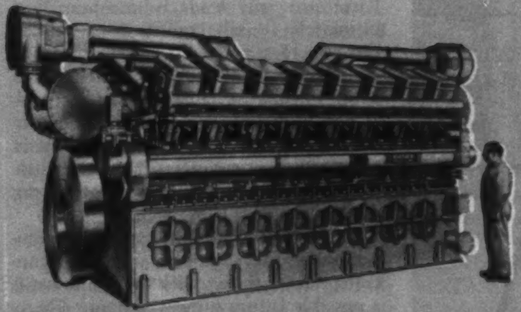
Increasing numbers of portable plant operators are now using Symons Cone Crushers for big capacity of fine product . . . such as this Cedarapids® portable intermediate crushing plant utilizing a 4' Symons Cone Crusher.

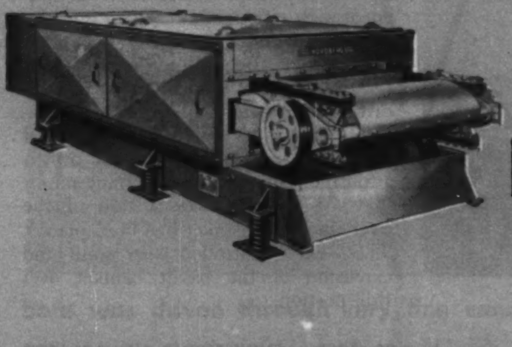
SYMONS VIBRATING SCREENS AND GRIZZLIES

Built in a wide range of types and sizes to meet practically all sizing requirements from heavy duty primary scalping to many fine screening applications.









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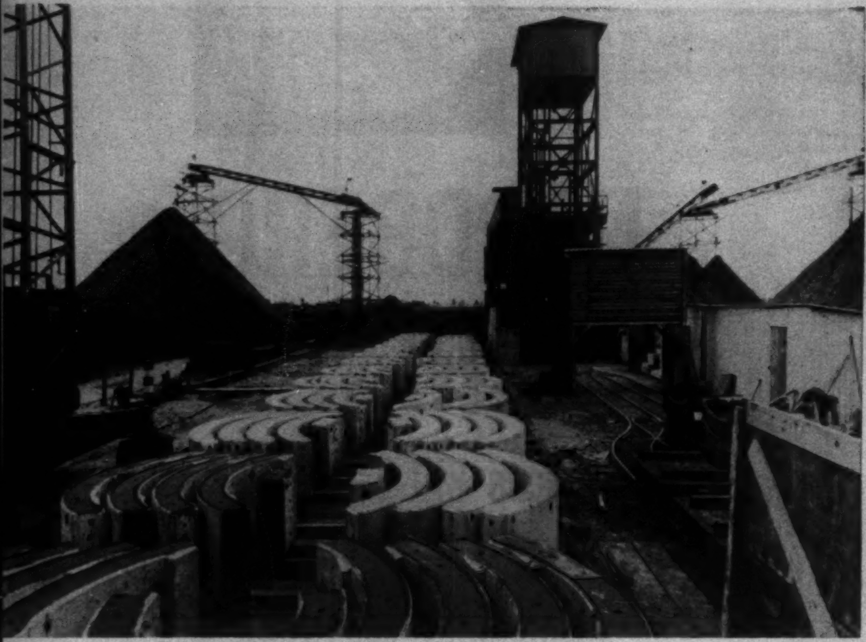
CIRCLE 109 ON READER SERVICE CARD



Precast concrete tunnel liner segments . . .

along with conventional

Concrete inlet caisson was built as it was sunk.

Dusseldorf

The 12-ft 56-in.-dia tunnel, driven un-River presently leads to nowhere, but ultimately it will convey sewage from the city to a proposed treatment plant on the west side of the river. It's a 2,965-ft bore at Dusseldorf, Germany.

The 12-ft 56-in.-dia tunnel, driven under air, will help to reduce pollution of the Rhine, but engineers had a more important purpose in mind when the bore was conceived.

Dusseldorf wanted to explore the economics and serviceability of precast concrete tunnel lining with an eye towards a possible future subway system. Therefore, the shield-driven tunnel under the Rhine was lined only partially with conventional cast iron rings. The remaining section has a primary lining consisting of precast, reinforced concrete segments.

The contractor agreed after conferences with city engineers, to install the precast concrete lining in the flood plain section. But to line the portion of the tunnel directly under the river with cast-iron segments.

The cast-iron section was completed under air pressures up to 25 psi in a routine fashion except for some minor blowouts in a shallow section of the river where no blanket had been placed. These were controlled with grout and extension of the basalt blanket over this portion.

cast-iron rings . . .

form sewage tunnel that has a dual purpose.

Tunnel: A Rhine River First

Once out from under the river, precast reinforced concrete rings were used. Considerable difficulty was encountered mainly as a result of cracked segments. This seemed to have been caused by the bending pressures of the shield's shove jacks and subsequently a steel jacking ring was installed for the purpose of distributing the load on the precast segments more evenly.

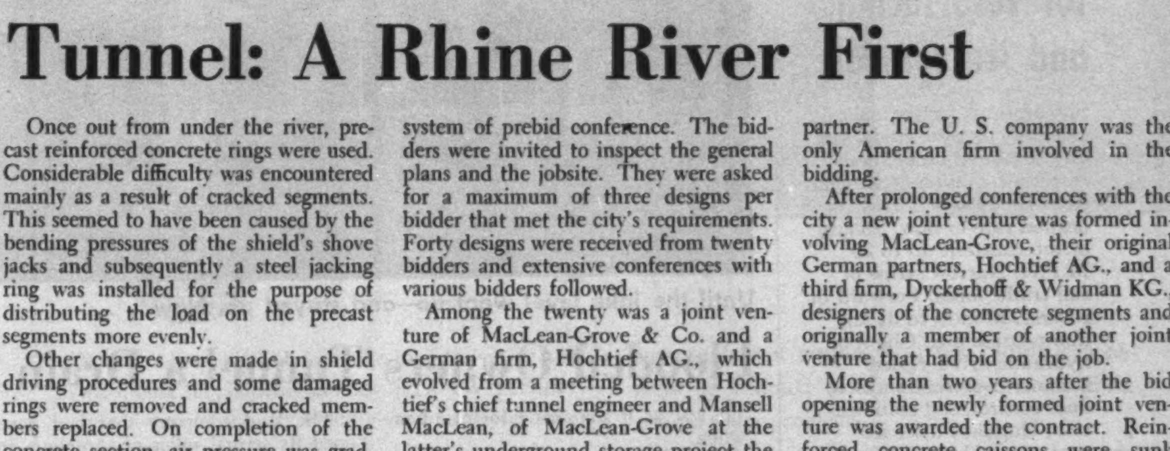
Other changes were made in shield driving procedures and some damaged rings were removed and cracked members replaced. On completion of the concrete section, air pressure was gradually reduced and minor leaks were sealed by grouting.

The city of Dusseldorf, with nothing more than a basic idea in mind, developed a rather broad, almost wide-open system of prebid conference. The bidders were invited to inspect the general plans and the jobsite. They were asked for a maximum of three designs per bidder that met the city's requirements. Forty designs were received from twenty bidders and extensive conferences with various bidders followed.

Among the twenty was a joint venture of MacLean-Grove & Co. and a German firm, Hochtief AG., which evolved from a meeting between Hochtief's chief tunnel engineer and Mansell MacLean, of MacLean-Grove at the latter's underground storage project the German engineer had visited some years before. This project plus the American firm's record on the third tube of the Lincoln Tunnel sold Hochtief on the American firm as a joint-venture partner. The U. S. company was the only American firm involved in the bidding.

After prolonged conferences with the city a new joint venture was formed involving MacLean-Grove, their original German partners, Hochtief AG., and a third firm, Dyckerhoff & Widman KG., designers of the concrete segments and originally a member of another joint venture that had bid on the job.

More than two years after the bid opening the newly formed joint venture was awarded the contract. Reinforced concrete caissons were sunk on each side of the Rhine by the German firms while the American firm drove the tunnel. Gerhard Gunther was project manager for the joint venture.



Bore was driven through very fine sand that flowed like water although dry.

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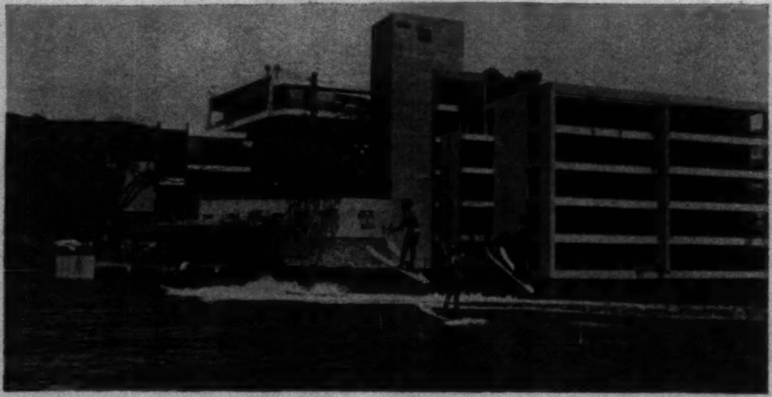
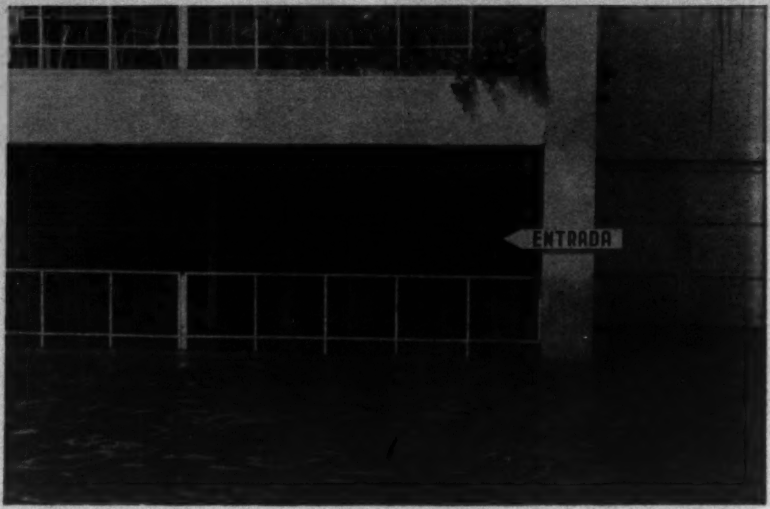


It was fun and games at this Mexican resort . . .



Until the lake level went up—and stayed up. Now . . .

Flooded Owners Tunnel a Drain

It was as if somebody forgot to say "when."

Lake Tequesquitengo—a week-end resort an hour out of Mexico City—had a legendary village somewhere in its depths, but there was no recorded history of serious fluctuations in its water level. From 1942 to 1951 it kept a steady level while developers built homes and a plush hotel on its shores. After '51 the level dropped four or five feet, and as the shoreline receded, more houses and two more hotels hunched up at the water's edge.

Then, in 1957, something happened.

The water began rising rather rapidly, flooding the buildings that had crowded it as it receded. It went higher to flood even those older buildings higher up.

By 1958 the lake was some 3 ft above its old level and in the 1954 rainy season it went about 3 ft above that.

The land company that had developed its several miles of shoreline—the oval lake is about four miles by two—had done little to alter drainage of its 1,200-acre holding. Springs and a stream feed the deep lake—100 to 150 ft deep near its middle; losses through underground streams and evaporation apparently had balanced the inflow. Mexico's earthquake of 1957 was blamed.

Geologists speculate that some of the lake's porous old limestone outlets were sealed and new springs opened up when the earth shifted in 1957.

Whatever the reason, it's been painfully obvious to the landowners around the lake that the raised level must somehow be lowered. Something had to be done to lower the water, get it out of their living rooms.

(*Continued on p. 114*)

Open trench, drained and ready for installation of main sewer for City of St. Petersburg, Florida, sewer expansion program

Whether your wet job is a mile-long trench or just a building site, depend on FOUNDATION WELLPOINT to put you in the dry quickly—and save you time and money.

The photograph shows one of our typical wellpoint installations, engineered for the City of St. Petersburg, Florida. Like many growing municipalities, this city is faced with a continuing sewer expansion program. This program is under the supervision of H. H. Girard, General Superintendent.

Whenever dewatering problems arise here, we are called in. Long experience has proved to the city authorities that FOUNDATION WELLPOINT can always be counted on to efficiently handle their ground water problems.

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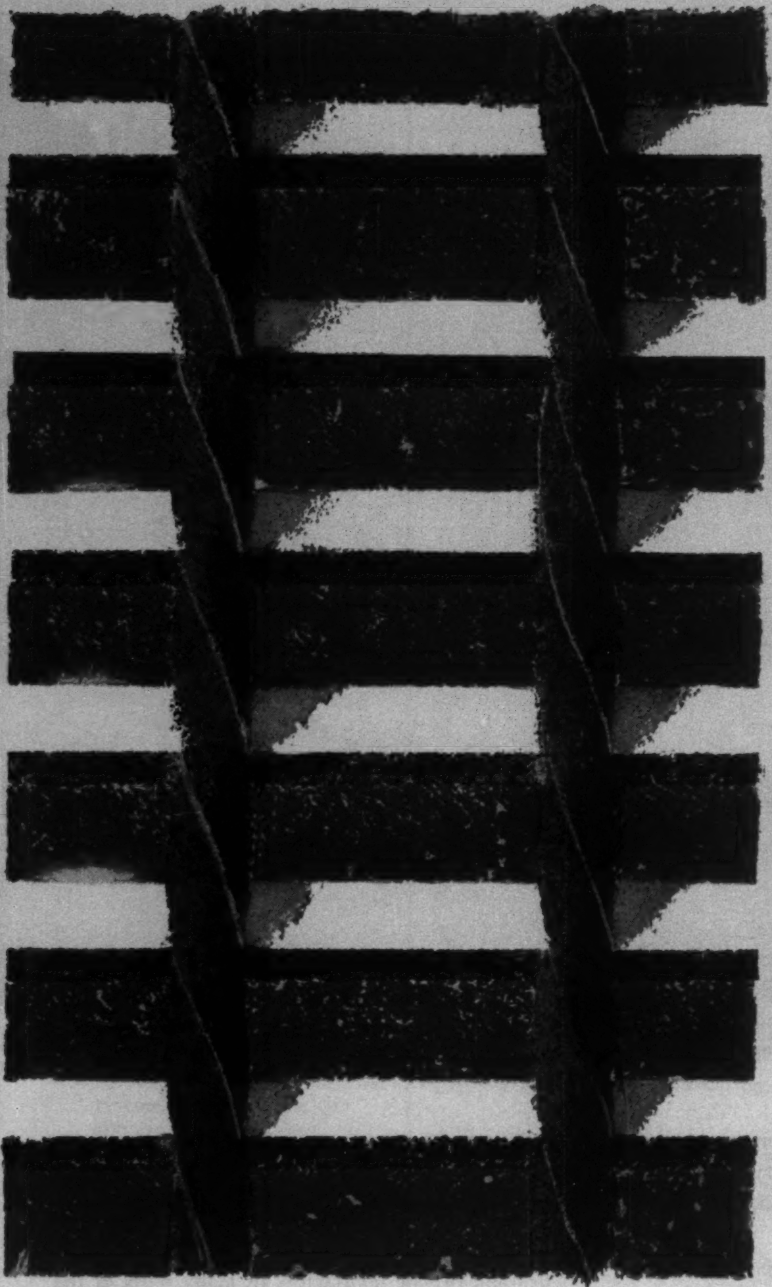

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Four possibilities were considered:

Siphoning was ruled out. The lowest saddle over which a siphon would have to haul the water had a 150-ft rise.

Siphon-plus-pump, too, was ruled out. The long leg of the siphon would have to be very long.

Straight pumping would work fine, but operation and maintenance costs over many years would be considerable, would eventually exceed the cost of a tunnel, a gravity drain.

A tunnel it was—an open-cut and tunnel combination—to give the naturally dammed lake a man-made outlet and get it out of those living rooms and lobbies.

The concrete pipe-lined tunnel will be about 8 ft in diameter and about 2,700 ft long. An open cut will be made from the lake to the hillside, where a small dam about 70 ft long will control discharge into the portal of the tunnel. It will also catch debris, keep it out of the tunnel.

Tunnel grade will be about 0.5%, and at the lower end the water will discharge down an arroyo to a river.

(This lake-drain system will eventually be used to carry sewage from the lakeside properties, according to William Pullen, manager of the land company. Septic tanks are used at present.)

Total cost of the tunnel, spillway dam and open cut will be about $400,000.

Cost of renovating the Hotel Tequesquitengo (see picture) will be about $50,000. All homes flooded will have to be refurbished and thousands of waterlogged palm trees on the previous lake shore will have to be replaced as the water returns to it.

The State of Morelos passed a law to make all property owners chip in on the tunnel project. The land company that had developed the lake's shores will pay one-fifth the total cost. Landowners will pay about $7.50 for each foot of lake-front they own.

Bids have not yet been taken on the tunnel. The job is expected to take nine months to a year, and it is hoped that construction will get under way late this year.

Once the plug's been pulled and the lake is dropped to where it used to be, the developers plan to dam up the inflowing stream. Their idea is to store water on it so they'll control inflows as well as outflows.

After all, the tunnel outlet will only keep the lake from rising. Unless something's done to keep it from falling, too, the shoreline might recede again.

And then people might build down to the new shoreline.

And then if the water came back up. . . .

B.F.Goodrich

Copter hop over the new Niagara

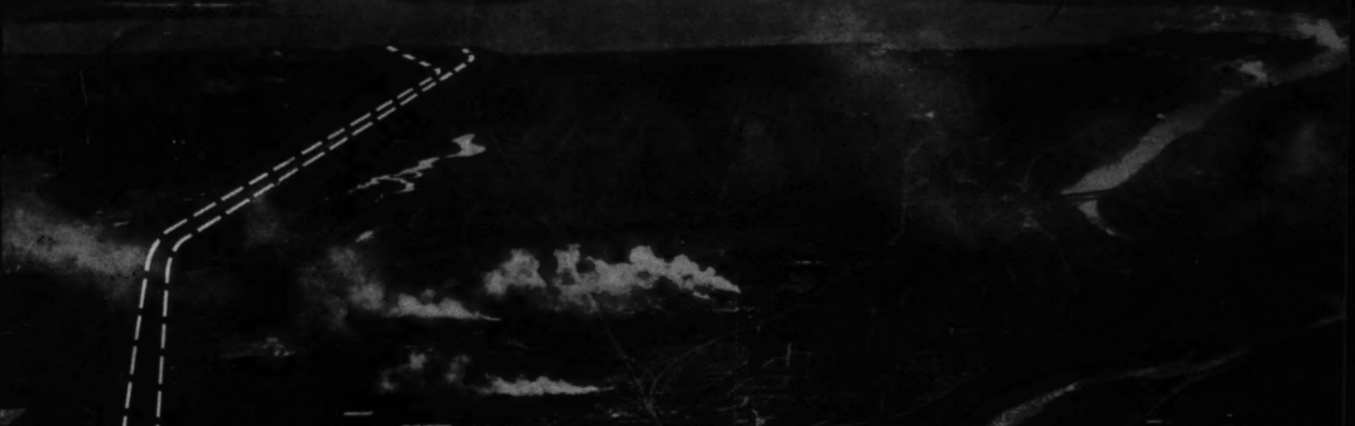
Ride in the Bell Ranger and see how B.F.Goodrich tires help build the world's mightiest power project

SOON THE CHURNING WATERS of the Niagara River will be generating more electrical power than ever—over two million kilowatts, enough to light a city the size of Chicago.

More electricity at lower cost is what we'll get from the $720-million Niagara Power Project, one of the biggest peace-time construction jobs in our history.

Already trucks and other earth-movers have shouldered their loads more than 800,000 times—enough trips to take them ten times around the world.

To cope with the challenges of this and other tasks, Merritt-Chapman & Scott Corporation, largest contractor on the project, uses B.F.Goodrich tires and other products.



NOW WE'RE AT 3,000 FEET. Below us is the entire Niagara Project. At the upper right are the Falls. At upper left, 2½ miles above the Falls, is the Intake Area. Here water will be diverted from the Niagara River into 2 giant covered conduits, each of which is as wide as a 4-lane highway and 5 times higher than the Holland Tunnel. These conduits take the water into the vast Storage Reservoir. From there it moves to the new Niagara Generating Plant, where it plummets down to drive 13 generators. Turn the page and learn how this mammoth job is progressing with the aid of B.F.Goodrich tires.

This B.F.Goodrich report continues ▶

CIRCLE 115 ON READER SERVICE CARD

B.F.Goodrich

SWOOPING DOWN we come over the conduit area that will carry water from the Niagara River to the new reservoir. Excavations for the 46′-wide covered conduits are 110′ x 50′. The trucks below us, hauling away rocks, are equipped with B.F.Goodrich tires. Altogether, more than 2100 B.F.Goodrich tires—on dump trucks, loaders, graders and other equipment—work 'round the clock, six days a week, rolling over rock-strewn Niagara excavation sites.

See how 2100 B.F.Goodrich tires

B.F.GOODRICH ROCK SERVICE TIRES have run up amazing service records at Niagara—over 5,000 hours in some cases! The new B.F.Goodrich Cut Protected tread compound is outstandingly successful at withstanding cutting and chipping from abrasive Niagara rock. Massive double-chevron Rock Service cleats give extra traction in forward or reverse. And because of the B.F.Goodrich Flex-Rite Nylon cord body, Rock Service tires are almost immune to heat blowouts and flex breaks. Result: you get more original-tread hours of service, more retreadable tires.

TO GIVE CONTRACTORS what they need *when* they need it, B.F.Goodrich built a warehouse near the Niagara project. A complete line of B.F.Goodrich tires is stored, ready for every emergency. At the B.F.Goodrich Tire Service Building on the job site, a crew of trained tire maintenance men works in shifts, 'round the clock.

IT'S AN EMERGENCY, and the B.F.Goodrich Tire Service Man is there. He's trained to handle any type tire on any type equipment. He has at his disposal all the latest power tools, such as hydraulic cranes, pneumatic wrenches, bead jacks. Background: 13 penstocks at Niagara Generating Plant will direct torrents of water into giant turbines. Penstocks are 462 feet long.

are helping men harness Niagara

From the beginning of work on the Niagara Power Project, B.F.Goodrich on-the-scene specialists have helped determine exactly the right B.F.Goodrich product for each particular job. In addition to Rock Service tires (now available in the new Cut Protected compound), B.F.Goodrich Rock Logger, Tractor Grader, All-Purpose, Mud-Snow and Power Express tires are at work.

B.F.Goodrich hose feeds air to machines drilling dynamite holes. B.F.Goodrich rain suits, gloves and footwear protect hundreds of construction workers. B.F.Goodrich conveyor belts will carry materials for 1,300,000 cubic yards of concrete, total required for the entire generating plant. And helping to keep the whole project humming are special B.F.Goodrich maintenance and service facilities—all part of the new B.F.Goodrich Unified Contractor Program.

No matter what your off-the-road job, B.F.Goodrich is ready to serve you, and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F.Goodrich Company, Akron 18, Ohio.*

SPECIFY B.F.Goodrich Tubeless or tube-type tires when ordering new equipment.

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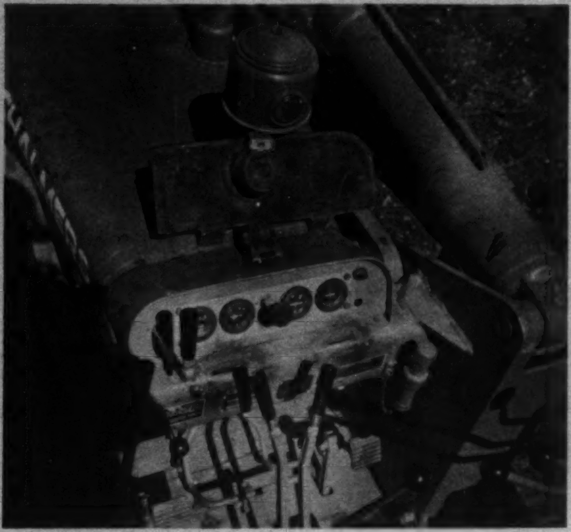
Here Are 8 Construction Tricks

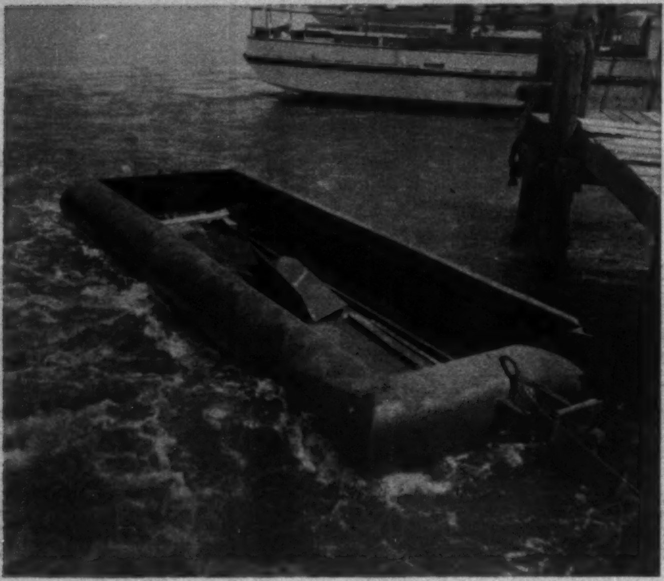


1. Prevent tampering with your machinery

by fashioning a plate to cover the dash. Ears on the bottom fit into slits cut into the dash. Hasp fixed on top of the panel locks into a ring that is welded to the plate. The well in the center is to make room for a projecting knob in the middle of the dash.

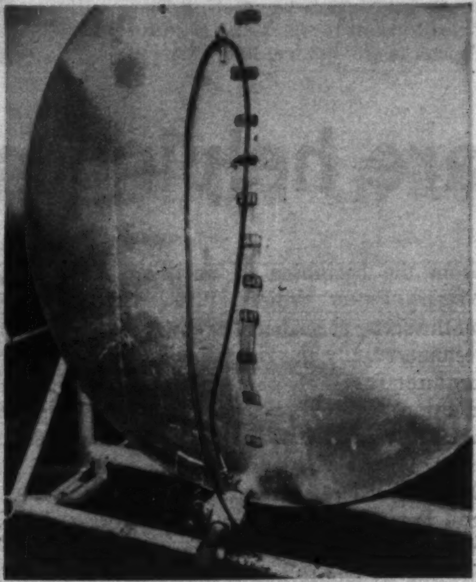
2. Mount your diesel fuel tank on a trailer

together with the pump and meter. It saves erecting a platform, moves easily as a packaged unit to the next jobsite and makes it possible to keep fuel supply close to machinery. When gas is wanted, just give a yank on the cord of the pump engine.



5. Construct a skiff from scraps of "big-inch" pipe

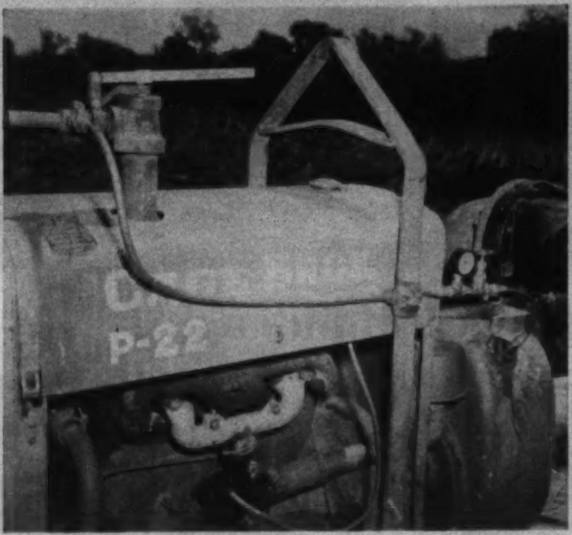
to carry tools or men to jobsites offshore or around docks. Torch a joint of pipe down the middle and cut the ends off at 45°. Then weld the pieces together as shown, using a section of flat steel plate for the bottom. Bumpers can be attached. The resulting skiff is cheap, watertight and rugged.



6. Make a gage from plastic hose

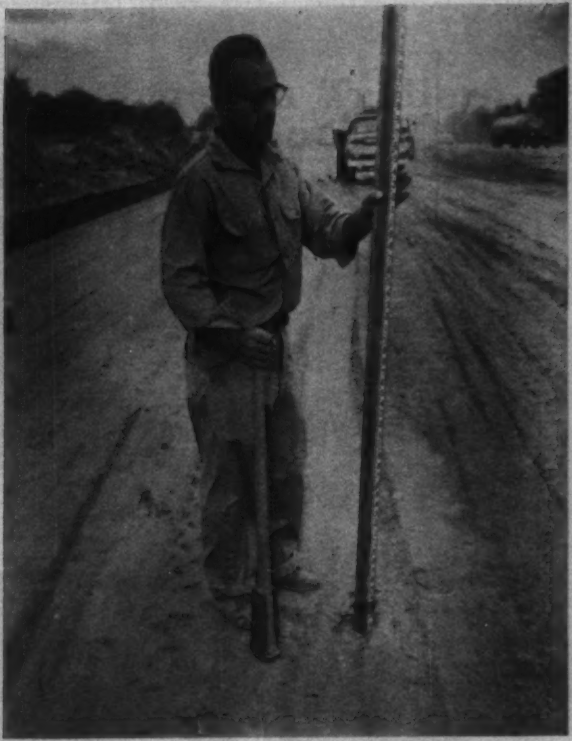
when using a field tank for liquid storage. Avoid contamination from running a gage rod, or even from making a hole for one, by mounting a plastic water hose in front. Calibrate it when you first fill the tank.

You Can Use



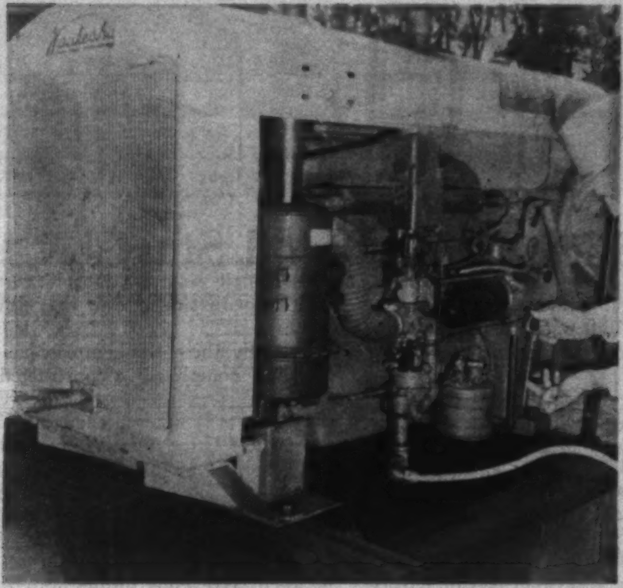
3. Press a lever and prime centrifugal pump.

The lever atop the exhaust stack is normally over to the left allowing full flow of the exhaust. When the pump is started, holding down the lever deflects the exhaust through a venturi tube, causing a vacuum in the pump case which pulls in water.



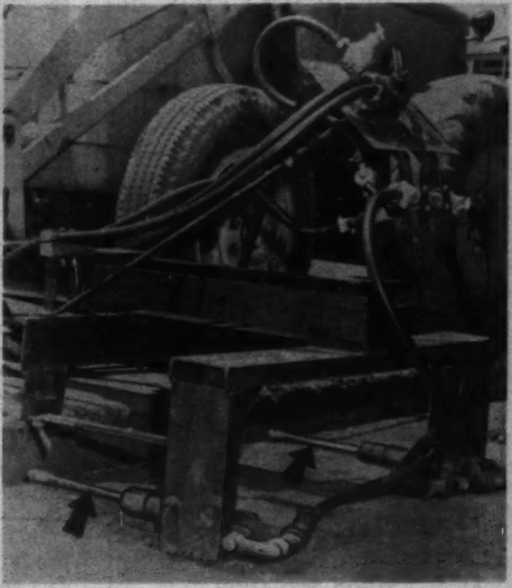
4. Don't stoop; use this handy stake driver.

It is a pick handle with a ½-in., 8-lb metal band wrapped around the bottom. Rodman alternately holds the rod and drives the stake, all from a standing position. He then has to stoop only long enough to smear the blue crayon on the grade stake.



7. Check oil without stopping stationary motors

by putting the dipstick where the oil is stable even when the engine is running. Place a tee just in front of the crank case plug and run a ⅜-in. pipe around to the most convenient side. Fabricate a new dipstick and insert it into the oil in the pipe. Oil will always be stable there.



8. Tie in new concrete with side-driller

on road widening projects. Two rock drills (arrows) mounted on a rubber-tired front end loader can drill two 1⅜-in. dia, 4-in.-deep holes per minute in the side of the old slab. Rig automatically positions itself.

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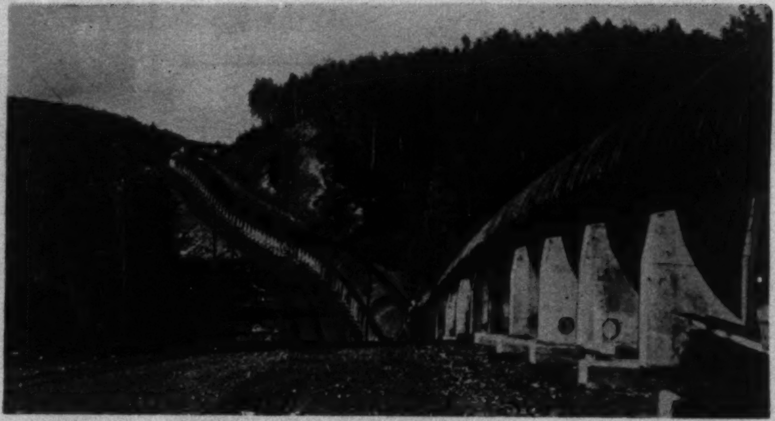
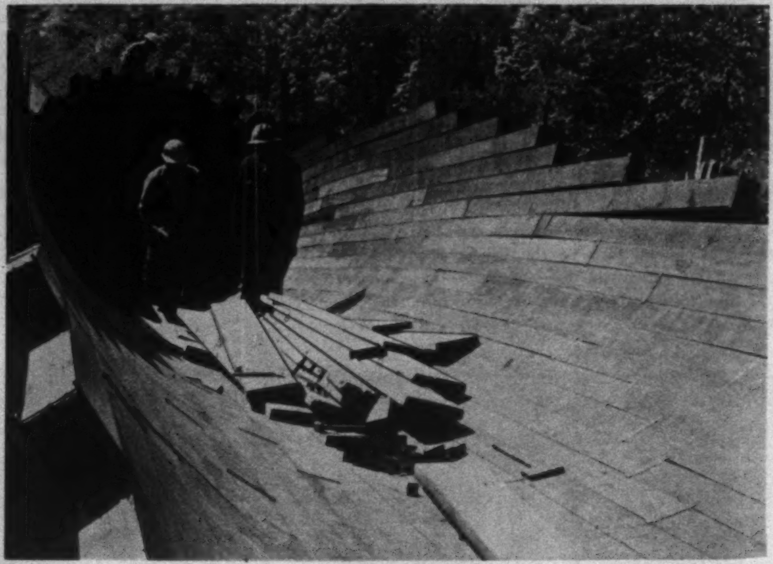


New Pipeline's Builder . . .



. . . Sticks with Wood Staves

A Michigan utility company has replaced a 6,050-ft water transmission line made of wood with another wood stave pipeline.

Upper Peninsula Power Co. decided on the wood pipeline after discovering, when the original 30-year-old wooden line needed emergency repairs, that it could get speedy service from the wood stave supplier.

In June, 1958, a break in the company's pipeline was repaired within 23 days and the first truckload of replacement staves was on the job six hours after the emergency call. Working round-the-clock, the supplier was able to come through with 72,000 board feet of kiln-dried Douglas fir in three days.

A 500-ft portion of the same line was repaired with similar ease in February 1959.

Recently, the power company has had the line completely reconstructed of kiln dried, pressure-creosoted fir. Each stave is 3½ × 5½ in., and there are 72 to the circle. Three quarters of a million board feet of lumber staves went into the rebuilt pipeline, which will carry water from the Victoria Falls dam to the utility's generating station.

A fabricated malleable iron casting between stave ends insures water-tight joints. The continuous stave pipe is banded with round steel bands connected with malleable iron shoes. Estimated life expectancy of the line is 50 years or longer.

(*Field and Office continued p. 122*)

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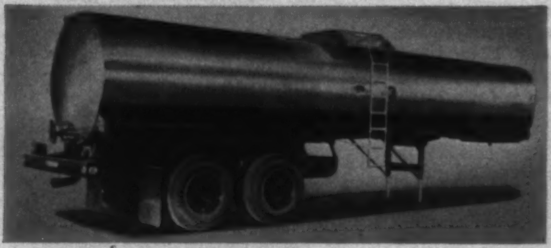
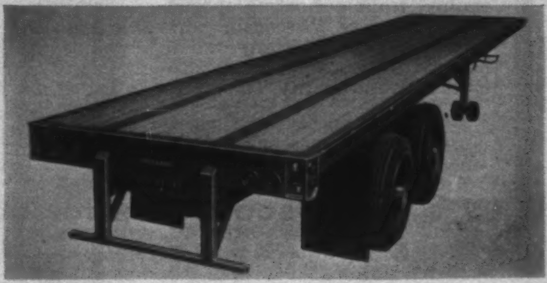


▲ **Hot Commodity Tank**—Fruehauf hot commodity tanks carry bigger payloads of asphalt, road oil or similar products. Tank capacities range up to 9,000 gallons, depending on product hauled. Available in rugged steel or weight-saving aluminum. Lower weight units materially reduce per-ton hauling costs.

Platform Trailers—Rugged Fruehauf Platforms range from brawny 50,000-pound capacity Workhorse units to lighter-weight, top quality, multi-purpose platforms. Lengths from 21½ feet for single axle units to 42 feet for tandems. ►



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CIRCLE 7 ON READER SERVICE CARD

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Vacuum Concrete Corporation, Vacuum Concrete, Inc. and Thermo-Fluid Corporation have merged with and become part of Vacuum Concrete Corporation of America. Vacuum Concrete Corporation of America now owns new and improved processes for vacuum lifting and for the economical processing of concrete . . . thus made several times more resistant to wear and to fire than standard concrete. Inquiries invited.

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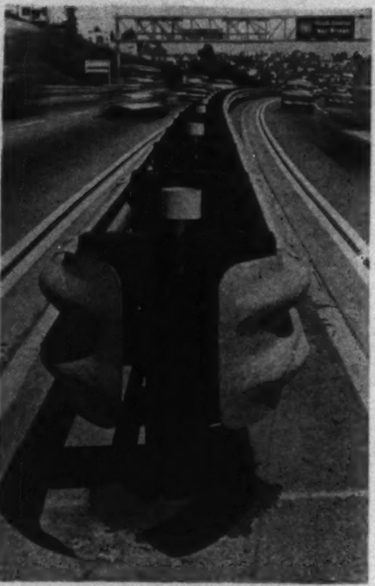
CIRCLE 122 ON READER SERVICE CARD



Fence Designed to Keep Cars in the Right Corral

With an eye on the mounting death toll from auto accidents, the California Division of Highways has installed this newly designed fence on those portions of San Francisco's Bayshore Freeway where the raised center strip is less than 12 ft wide.

Corrugated steel sheets are mounted on 8x8-in. timber posts with timber blockouts. Posts are spaced on 12½-ft centers. Posts are 5 ft long—2 ft 5 in. buried, 2 ft 7 in. on top. Exposed timber is pressure treated with creosote and petroleum to 8-lb density.

Those tin-can affairs fastened to the top of every other post are reflectors.

Lab Tests Use Fussy Fish To Detect Foul Water

Fish have been made to climb ladders, take boat trips and ride lifts. Now they're being used as guinea pigs.

Sunfish and trout are helping the Pennsylvania health department pinpoint the degree of pollution in the state's streams.

The "guinea pig" fish are taken from streams and placed in laboratory tanks where they are specially pampered with recirculated water and made to thrive on a diet of the finest fish foods.

Stream water suspected of being polluted is shipped to the Harrisburg laboratories. The healthy, lively fish are placed in this water and their reactions watched carefully.

According to health department officials, the hyper-finicky fish are detecting bad water that defies the usual chemical tests.

(*Field and Office continued p. 124*)

Some Ideas

K+E

for your file of practical information on surveying . . . from

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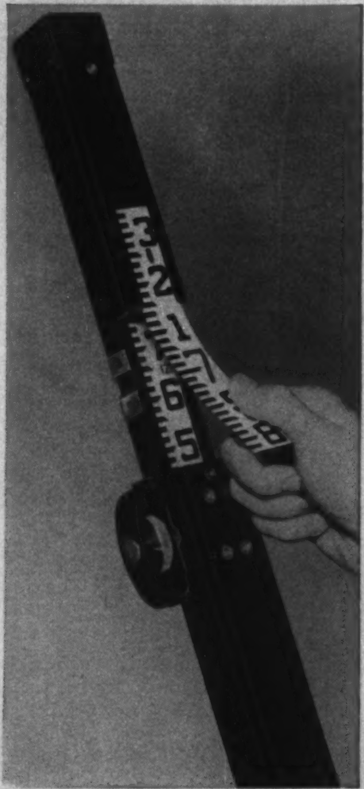
"For want of a nail . . . the battle was lost." This might well be the epitaph for many a tardy survey. The right surveying accessories can do wonders to speed a field party's operation . . . and the lack of same can cause delays in a hundred minor ways a day. How goes the tempo of your work lately? . . .

Does your flagging really flag?

This K&E flagging does everything but tie its own knot. Made of tough, embossed vinyl plastic, it's practically impervious to time and tempest. Unlike the "quick-to-quit" red cloth commonly pressed into flagging service, this plastic flagging resists wind ravel like the stake itself, remains supple even at – 35° F., tears quick and clean, has exceptionally high tensile strength, and takes both pencil and ball-point pen like paper. Available in five high-visibility colors (red, yellow, blue, orange and white), K&E Plastic Flagging (No. 6525) measures 1¼" in width and comes in handy 4" diameter, 300′ rolls. Great for gift wrapping and decorating, too!

You're only as good as your scales

A complete line of hard-to-get items has long been a K&E specialty. Of particular interest here is K&E's comprehensive line of Leveling Rod Replacement Scales. Available for all K&E metal-face rods, these replacement scales are marked in the conventional pattern and design in feet, 10ths and 100ths. In addition, they feature "ready-reading" foot numbers in red between the 3rd, 4th, 6th and 7th tenths to facilitate reading on short shots when the main foot marks are likely to be outside the field of view.



If your off-the-rod readings seem to be a bit fuzzy lately, don't throw out an expensive rod, simply replace the face with an inexpensive *new scale.* It takes but a few minutes with a screwdriver and small hammer to install one of these nominally-priced replacements. And how about carrying a spare for emergencies?

Should a leveling rod be level?

The unassisted naked eye – despite its widespread popularity – is *not* the tool to guarantee a vertical leveling rod. A handy K&E device called a Rod Level (No. N6299) is the proper Rx here. It's a simple bubble unit on a long-angle contact arm that affixes to the edge of the leveling rod in semi-permanent fashion. When the bubble is centered, the rod is vertical . . . and no mistake about it! This inexpensive but accurate device eliminates guesswork, makes for truly *precise* readings, and works easily – no juggling act required, just a fairly steady hand.

Now, for carrying this equipment...

. . . may we suggest the handsome Surveyor's Leather Bag (No. 6540)? Here's a sturdy carry-all expressly made to withstand the rigors of field work. Heavy-duty stitched throughout, it has an adjustable shoulder strap with movable pressure-pad, rust-resistant brass hardware, separate pad and paper slot, roomy interior pocket, and a rich riding-boot finish in natural tan. Measuring 10" high by 12" across by 2½" wide, it affords plenty of room for field book, plumb bob, tacks, targets, pencils, keel, measuring tape, numerous rolls of plastic flagging, replacement scales, and a rod level . . . to say nothing of your lunch, a few trout flies, etc.

All these and other K&E time-savers are available from your local K&E Dealer . . . or you can send us the coupon below for further information.

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Railroads Experiment With Asphalt-Treated Roadbeds

Seven railroads are conducting tests of asphalt-treated roadbeds. Objective of the treatment is to reduce annual cost of roadbed maintenance, including tie replacement costs.

Equipment used in the experiments consists of two units—a special asphalt distributor mounted on a flat car and bottom-dump hopper specially modified for controlled stone spreading.

Hot asphalt cement is fed to the distributor from insulated tank cars. A spray bar is mounted beneath the distributor with swinging spray bars on either side of the car. The outrigger bars can be retracted for job-to-job travel. The car has a pump, hot oil system for maintaining heated supply lines, and a tachometer for controlling the rate of application.

The stone-spreading car is a conventional bottom-dump hopper of 50-ton capacity with a special spreading attachment that is mounted beneath the car.

Last year, the Atchison, Topeka and Santa Fe carried out several experimental projects. A two-mile section near Barstow, Calif. utilized 85-100 penetration grade asphalt cement applied at a rate of 1¼ gal per sq yd. The asphalt penetrated the stone ballast to a depth of more than 2 in. Cover stone, applied at a rate of 10 lb per sq yd, served principally as a blotter course.

The seven lines performing this year's experiments are the Norfolk & Western, Roanoke, Va.; Monon, Chicago; Louisville & Nashville, Louisville, Ky.; Chicago & Northwestern, Chicago; Rock Island, Chicago; Texas & Pacific, Dallas; and the Pittsburgh & West Virginia, Pittsburgh.

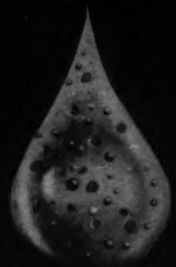
New York Adds UTM Grid To Highway Condition Maps

Cooperating with the State Civil Defense Commission, the Department of Public Works of the State of New York has added Universal Transverse Mercator (UTM) grid coordinates to its highway condition maps.

The UTM grid markings consist of numbered markers, or ticks, for locating 10,000-meter UTM grids and letters to designate the UTM grid squares and grid zones.

Map makers added the markings in light blue around the border. To use the map for civil defense purpose, all the CD workers need do is draw in the grid lines and label the grid squares.

BETTER CONCRETE THROUGH DISPERSION CHEMISTRY



DARATARD

INITIAL SET RETARDER

on the job at Boston Harbor

One of the world's largest caissons, this giant structure measuring 120-feet deep and 127 feet in diameter, is designed to serve the Boston area as a sewage holding tank.

Unique construction involves excavating as walls are formed, and sinking of lifts into place by weight. Specifications called for walls 9-feet thick to be poured for 12-foot lifts in layers of not more than 18 inches.

DARATARD, Dewey and Almy's chemical-engineered retarding agent was specified to eliminate cold joints between layers and insure monolithic construction in each 12-foot lift.

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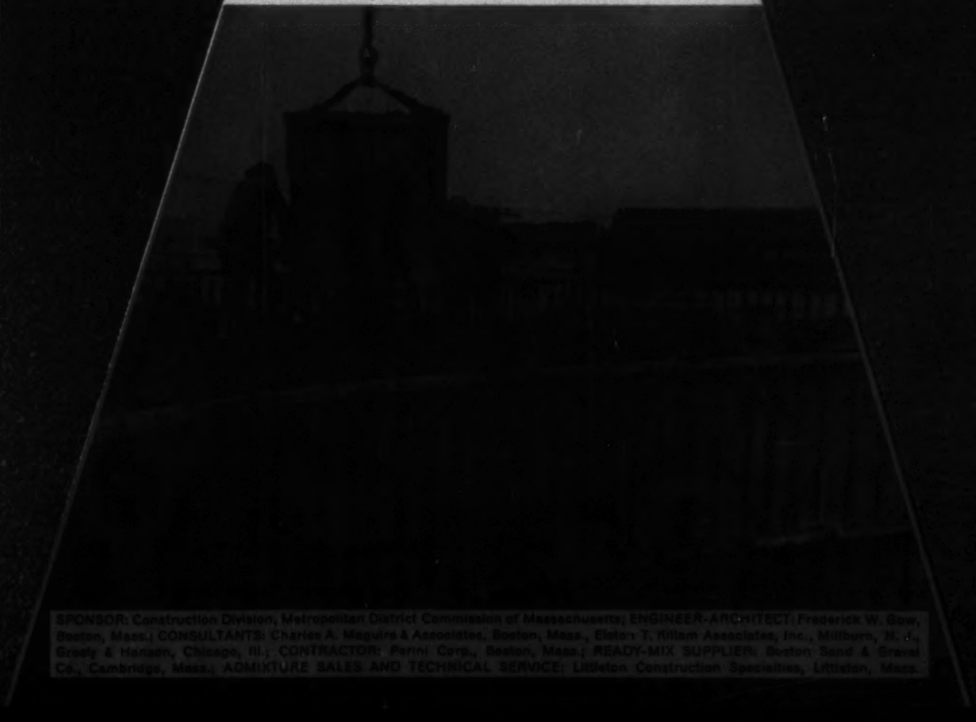

SPONSOR: Construction Division, Metropolitan District Commission of Massachusetts; ENGINEER-ARCHITECT: Frederick W. Gow, Boston, Mass.; CONSULTANTS: Charles A. Maguire & Associates, Boston, Mass., Elson T. Killam Associates, Inc., Millburn, N. J., Greely & Hansen, Chicago, Ill.; CONTRACTOR: Perini Corp., Boston, Mass.; READY-MIX SUPPLIER: Boston Sand & Gravel Co., Cambridge, Mass.; ADMIXTURE SALES AND TECHNICAL SERVICE: Littleton Construction Specialties, Littleton, Mass.

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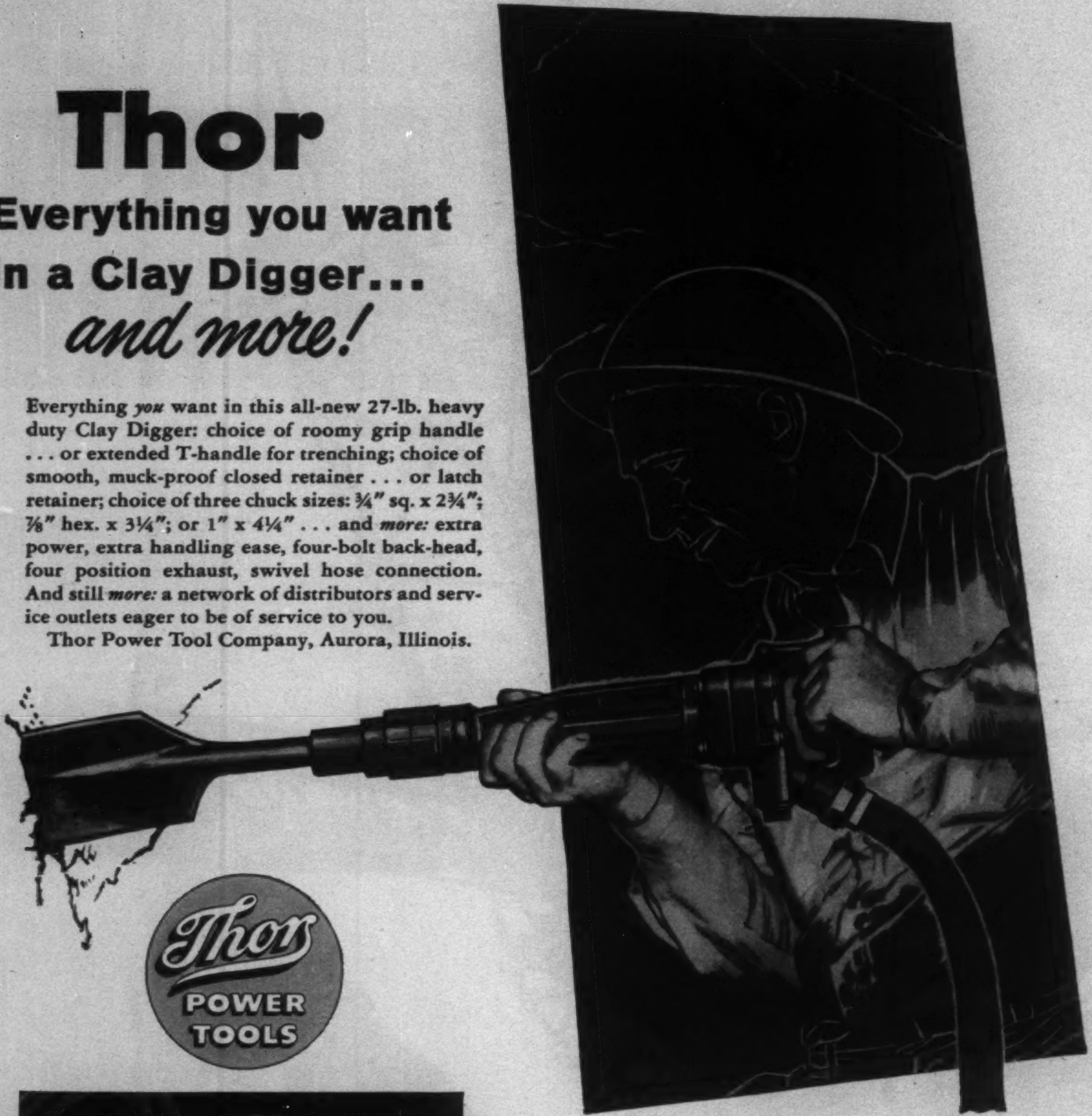
Thor Power Tool Company, Aurora, Illinois.



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Everything you want in a Tugger Hoist...*and more!*

Two new capacities, 750 lbs. and 1500 lbs. Air operated, can be controlled completely by one hand —raise, stop, hold, lower load... at any desired speed. Auxiliary clutch and brake for extra versatility. Remote control (same one-hand operation) optional.

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Research and Development

Big Highway Research Proposed

The 19-man executive committee of the American Association of State Highway Officials this month will consider proposals for a greatly expanded program of highway research.

The stepped-up program was recommended in a special report to the Highway Research Board (ENR June 2, p. 19). The report calls for a four- to five-year program at an estimated cost of $34 million.

This report climaxes two years of work by a five-man special committee, which screened 101 specific proposals for urgently needed research from HRB's technical committees, members of AASHO, and other sources.

Chairman of the HRB group is E. H. Holmes, Assistant Commissioner for Research of the U. S. Bureau of Public Roads. Other members are Harmer E. Davis, Director, Institute of Transportation and Traffic Engineering, University of California; W. A. Bugge, Director of Highways, State of Washington; F. V. Reagel, Engineer of Materials and Tests, Missouri Highway Department; and Otto H. Fritzsche, State Highway Engineer of New Jersey.

The report said that "a wider and deeper knowledge in every field of highway transportation is indispensable," and defined 19 broad areas of research, each of which "is adjudged to rate A-1 in importance and urgency." The group also designated appropriate sources of financial support—public funds, state highway department operating budgets, foundation, or industry.

Here are the areas of research delineated by the committee on the estimated cost of research over four to five years.

Controlling development of land in vicinity of freeway interchanges	$200,000
Design, traffic control, and spacing of ramps and interchanges	500,000
Intensive investigation of accidents	$2,000,000
Comprehensive study of passenger transportation in metropolitan areas	1,000,000
Comprehensive study of freight transportation by motor vehicles in rural and urban areas	500,000
Translation of the results of the AASHO road test in Illinois to conditions in other states	5,000,000*
Snow and ice removal or treatment	1,000,000
Improvement of knowledge of aggregates and soils	10,000,000
Improvement of highway maintenance	750,000
Improvement of techniques for forecasting traffic and revenues	250,000
Sharpening of figures of tangible road user benefits and development of method for appraising benefits now called intangible	500,000
Conceptual study of non-user and community benefits of highway construction in relation to user benefits	1,000,000
Warrants for lighting freeways	1,000,000
Standards for secondary and local roads	50,000
Development of driving simulator	3,500,000
Electronic control of vehicles	3,000,000
Analysis of the interactions of road and vehicle	500,000
Simulation of traffic flow	3,000,000
Improvement of motor vehicle administration	250,000

*** (Research phases only)**

Spread over 4 or 5 years, the additional research would increase present expenditures by 38%. Current spending runs about $17.8 million per year.

Soils and aggregates call for largest outlay. Research in this area is "most urgent because of the accelerating demand for roadbuilding materials and the diminishing supply of aggregates," according to the committee.

Extension of AASHO test road results to design of highways in states other than Illinois will require a sizable expenditure, the committee estimates. Much of this cost will go into computer programs for statistical translation of test road data into formulas fitting conditions in other states. This translation may satisfy the statisticians completely, according to Chairman Holmes, but he expects engineers to demand additional corroborative proof based on physical research testing.

On research recommended in the areas of user and non-user benefits, Holmes feels that BPR has done the best it could with the information and time available in preparing its report for Congress next January. But BPR's current answers on user, non-user benefits are not thoroughly satisfactory, and much additional research is needed.

On electronic driving control, the possibilities appear limitless, dependent only on what the driver wants and is willing to pay for. Similarly, dynamic interactions of road and vehicle, development of driving simulators, new forecasting techniques for traffic and revenues, computer simulation of traffic flow, and transportation investigations—both passenger and freight—offer relatively unexplored territory for urgently needed research.

One source of research funds frequently mentioned for financing the additional investigations is the 1½% research and planning allowance included each year in the federal-aid apportionment to the states. This percentage of the $2.9-billion total for fiscal 1961 yields the tidy sum of $43.5 million.

Not all this money can go into research, of course. But some of it might be added to the $17.8-million current level of research expenditure, which amounts to only one-fifth of a cent out of each highway dollar spent for construction, maintenance and operation.

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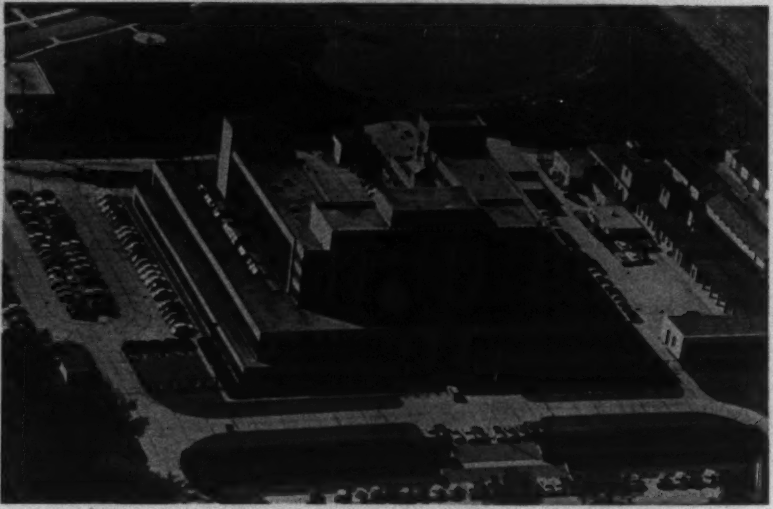

U. S. Forest Products Lab Celebrates . . .

Fifty Years of Wood Research

The U. S. Forest Products Laboratory in Madison, Wis., celebrated its Golden Anniversary this month with a three-day openhouse.

Accomplishments of 50 years were reviewed; current R&D projects were on display; and laboratory officials spelled our research needed for the future growth of wood products in construction.

FPL—as the lab is called—has sparkplugged numerous commercial uses of wood and wood products in the home-building and heavy construction fields. It has been a fountainhead of basic scientific data on which the wood industry has been able to build a wide diversification of products.

GLUE JOINTS FOR STRENGTH

FPL'S OBJECTIVE: "One glue that bonds anything to everything, permanently."

The stressed-skin building panel—developed originally for airplane construction with its advantageous ratio of strength to weight—was the key to prefabricated housing on a mass-produced basis. About three-fourths of the 137,000 prefabricated houses built in 1959 used stressed-skin panels.

Laminating techniques developed at FPL triggered an industry that produces several million dollars worth of glued laminated timber arches and other structural components annually.

Other R&D dividends include tests in wood strength that permit more accurate grading of lumber. By establishing the strength of all native commercial woods, FPL has enabled engineers to design better structures with less lumber and at a lower cost.

Additional research, proposed in cooperation with lumber producers, should determine more accurately the density of western softwood species, which could lead to higher permissible design stresses if present strength values are found to be too conservative. And in another project, the laboratory is looking into ways of preserving wood without using toxic chemicals.

FPL sees its future in learning how to utilize about one-half the tree that is still wasted in limbs, tops, sawdust, slabs and edgings. Chemical processes are sought to convert this waste material into useful products. Better usage

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MARIONS ARE!

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- **EXCELLENT FLOTATION** means these Marions can work and travel almost anywhere a man can walk.
- **PIN POINT LOAD SPOTTING** with Marions permit the operator to spot each load precisely, safely in a minimum of time.
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- **THIRD DRUM** (optional) is like having an extra hand which can be used without interfering with other machine functions.
- **INDEPENDENT PROPEL** is a real work-multiplier for it allows the operator to work and travel the machine at the same time.
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No matter what machine you're now using for your bridge crane applications—if it isn't a Marion better take a hard look at the new look . . . the 1960 model Marion bridge cranes. Available in models from 15 to 75 tons lifting capacity.

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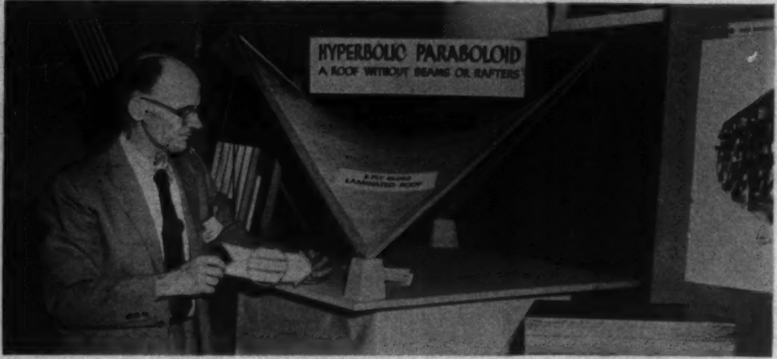
HYPERBOLIC PARABOLOID
A ROOF WITHOUT BEAMS OR RAFTERS

NEW SHAPES IN WOOD include the versatile HP.

also must be made of large quantities of small, low-grade, second-growth trees.

Recent and current research accomplishments of FPL of special interest to the construction industry include: Methods of treating wood to make it resistant to fire, decay and weathering; how to make veneer, plywood and laminated products.

FPL does considerable research with glues and gluing procedures. Its objective: "One glue that bonds anything to everything, permanently." Research in this field has already taken the secrecy out of gluing. It has produced glues stronger and more durable than wood itself. It has also opened the way for new architectural and structural shapes.

Edward G. Locke is director of the U. S. Forest Products Laboratory, which is a unit of the U. S. Department of Agriculture's Forest Service.

Oregon Dunes Yield Fresh Water

Research by a western utility has exposed a source of fresh water in the dry, windswept sand dunes on Oregon's Coos Bay. The Pacific Power & Light Co. has been at work for six years on a project to develop the industrial capacity of the Coos Bay area.

Rich in timber, the region's resources have gone undeveloped because of lack of industrial water.

Precipitous watersheds and craggy terrain rule out storage of an annual rainfall of 65 in., but the dunes turned out to be a natural reservoir, holding the water in underground reservoirs.

The light company's investigations followed through on preliminary studies by the U.S. Geological Survey. By stratigraphic core and well drilling operations, PP&L engineers and geologists narrowed the area of possibilites to sand dunes stretching 12 miles north of the bay, an area extending over 13,000 acres.

The presence of fresh water was confirmed in early studies. Hydrologists and geologists of the utility's research staff then installed 170 piezometers to measure the water table and its fluctuations under seasonal conditions. Pumping from one of the small surface ponds in the dunes' area indicated underground replenishment. Then a 36-in.-dia, 200-ft-long horizontal gallery of pervious concrete pipe was installed under the surface for a water collector. Pumping from this horizontal system was begun in 1956 and established dependability of the flow.

Late in 1957 a prototype pumping facility using vertical wells was installed and produced a flow averaging 1.5 mgd.

With steady flow established and more assured, Pacific Power was granted permission by the State of Oregon to the take up to 20,800 gpm from as many as 64 wells.

The utility's research effort will begin to pay off next year when Menasha Wooden Ware Co. begins operating a $5-million pulp and paper mill built on the sand dunes north of Coos Bay. The dune wells will supply 2.5 mgd to the mill.

Control Gear Controls Sluice-Gate Jamming

Sluice gates of power plants are jammed just as easily by incorrect hoisting or lowering practices as by solid objects found in rivers.

A control method has been developed which measures the exact position of the sluice gates upper and lower edges on both sides. These measurements are translated into impulses that automatically stop the movement of the gate as soon as a difference in the level of the gate is indicated. This prevents jamming in sluice gate guides.

The device was developed at the Muehrading power plant on the Enns River, Upper Austria province.

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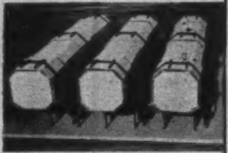
FOR
HOLLOW SLAB
BRIDGES

BETTER DESIGN! Jay Tubes give maximum strength and displacement of concrete for a given cross-sectional area. Cellular cores provide multiple cross-bracing for great resistance to crushing, and compartmentation minimizes concrete loss from holes that might occur.

RIGID & RUGGED! Both material and design contribute to the better job done by Jay Tubes. They are constructed of Freezurboard, an asphalt-impregnated and wax-saturated construction board exclusive with Lawrence Paper Company. Freezurboard is not to be confused with ordinary kraft or paper materials.

JAY TUBES DISPLACE MORE CONCRETE . . . PROVIDE LOAD CARRYING CAPACITY BY REDUCING DEAD LOAD WEIGHT . . . SHIPPED FLAT TO SAVE ON FREIGHT, HANDLING AND STORAGE.

Jay Tubes may be strapped down by conventional methods or by the new Jay System of tie-down.



QUICK! Self-centering and self-aligning, the Jay System requires fewer holes in the decks which need not be exact. Standard bolsters and pre-formed hold-down bars with hook fasteners are all easy and quick to put in place! Eliminates individual chairs, time-consuming strapping, and requires no special tools.

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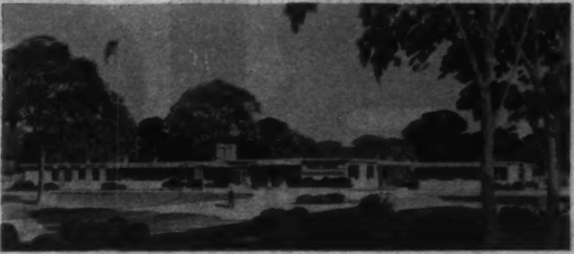


"Penmetal's structural system saved time, space and money"

says architect for new hospital

"Construction time was reduced because the frame was fabricated off the site while preliminary work was installed," explains Alfonso Alvarez, architect for the West Essex General Hospital in Livingston, New Jersey.

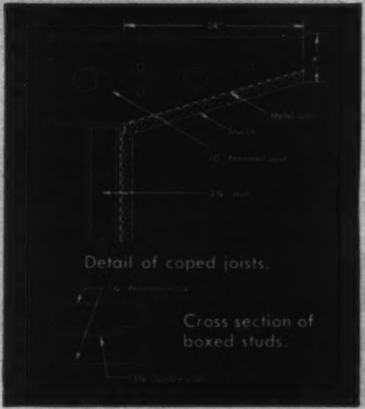
"The use of 2½" solid plaster partitions made possible a saving in floor area and cut down on the noise between rooms. X-ray protection was provided simply and economically by using the Permalock nailable stud with lead foil gypsum lath. All these savings are reflected in the low cost of this building, which provides complete hospital services."

The West Essex General Hospital has 42 beds with core facilities planned for expansion to 75. Total area is 21,250 square feet. Cost of construction: $433,607, bringing the cost per bed to only $10,324.

Send for new catalog SS-33 which describes this versatile framing system.

Penmetal 3⅝", 16-gage studs were used for exterior and interior load-bearing walls.

Penmetal 10" structural-steel joists were used in the roof construction. The joists at the outside wall were coped to give the overhang a flare. Cross-sectional detail shows how double studs between windows were boxed with two sections of track to provide additional structural strength.



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PM-247

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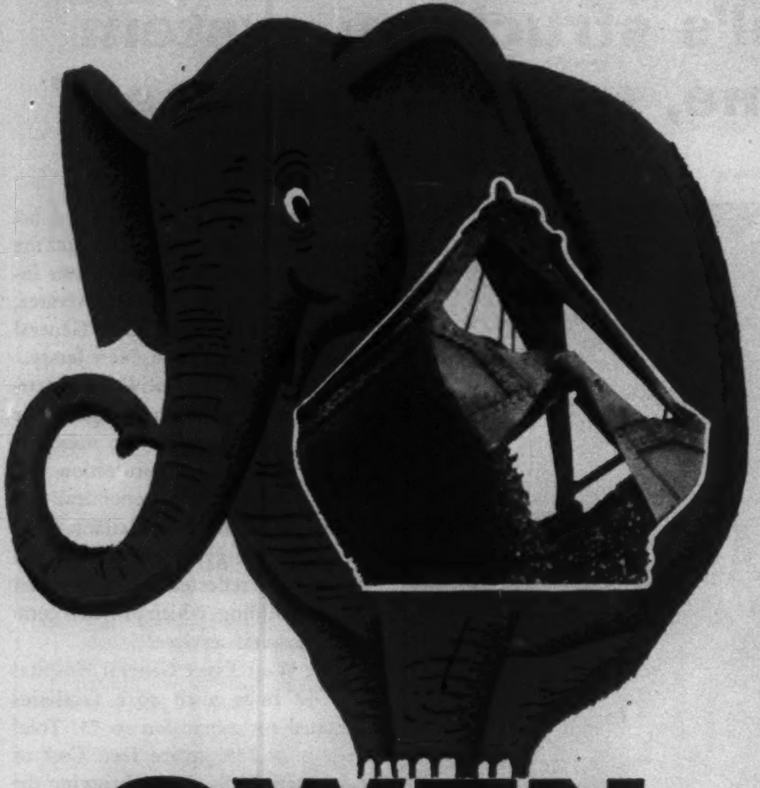

OWEN

OWEN clamshells are constructed with increased power and more durability foremost in mind. One of these features is the recessing of the top of each lip to receive the bowl plates. This gives the bucket a smooth interior and also relieves all stress and shear on the rivets that join the lips to the bowl plates. **Recessed lips are standard on all OWEN buckets —and at no additional cost!**

This is just one of the many reasons why OWEN Buckets are guaranteed pound for pound—size for size—to get a bigger load each bite—a larger output each day.

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BRANCHES: New York • Philadelphia • Chicago
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Plastic Design in Steel Wins Wide Acceptance

Three of the four major model building codes in the U. S. have approved plastic design of steel framing. And sponsors of the other code have indicated that approval will come with its next building code revision.

The three codes incorporating plastic design specifications:

- Basic Building Code of the Building Officials Conference of America
- Uniform Building Code of the International Building Officials Conference
- Southern Building Code of the Southern Building Congress.

The National Board of Fire Underwriters, though its National Building Code does not yet contain the "Rules for Plastic Design and Fabrication" of the American Institute of Steel Construction, will approve plastic design on an individual project basis.

These four codes are either incorporated in or used as code-drafting guides by some 2,500 to 3,000 U.S. cities.

A continuing AISC survey, begun in March, indicates that 56% the nation's 137 cities over 100,000 population either have approved or intend to approve the plastic design provisions soon. Seventeen of these cities have already adopted them.

Five states—New York, North Carolina, Ohio, Indiana and Wisconsin—have plastic design in their codes.

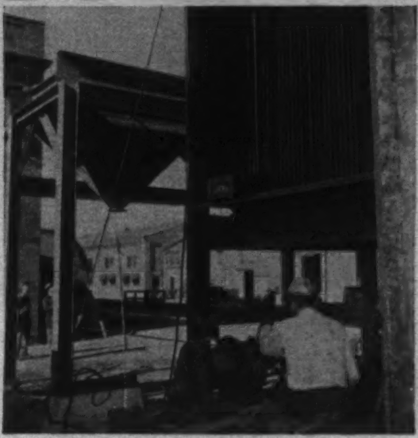
Federal agencies permit plastic analysis for protective construction, though the standards of the Army, Navy, and Public Buildings Service don't contain provisions for it yet. Revisions currently under way, however, are expected to update these steel design specifications.

Progress in securing approval of plastic design has been gratifying, according to Mace Bell, chief of AISC's district engineers. The AISC manual, "Plastic Design in Steel," was issued less than a year and a half ago. Achieving comparable progress in adoption of specifications for high-strength bolts required about four years from the issuance of specifications in 1951.

AISC has followed its sponsorship of the plastic design research program at Lehigh University with an educational campaign. Conferences and lectures throughout the nation have informed engineers, educators, fabricators and building officials about the new theory.

Despite its rapid progress, the U.S. lags behind Great Britain in putting the concept into practice. There are some 175 known U.S. structures designed by plastic theory, and about 1,000 in Great Britain.

NEW PORTABLE I-R HOIST



REPLACES BULKY, EXPENSIVE CRANES!

I-R's new, rugged, but compact K6U Hoist easily handles heavier loadings which ordinarily tie up cumbersome cranes and other expensive equipment. It can handle bigger loads than any other single drum air hoist on the market. Yet you get the same adaptability and light handling characteristics that made its smaller predecessors real time and money savers on materials handling jobs in all industries.

New I-R Size K6U
Single Drum
Utility Air Motor Hoist

Rated capacity is 7000 lbs. with maximum speed of 65 ft. per minute. (Companion hoist K6UA available with rated capacity 5000 lbs. and maximum speed of 95 ft. per minute.)

Hoist has reversible 6-cylinder Air Motor with safety-type throttle which shuts off automatically when released. Reversible motor permits full control of suspended loads with throttle only. (Remote control equipment optional.) Can be mounted in any position for a wide variety of lifting and pulling jobs.

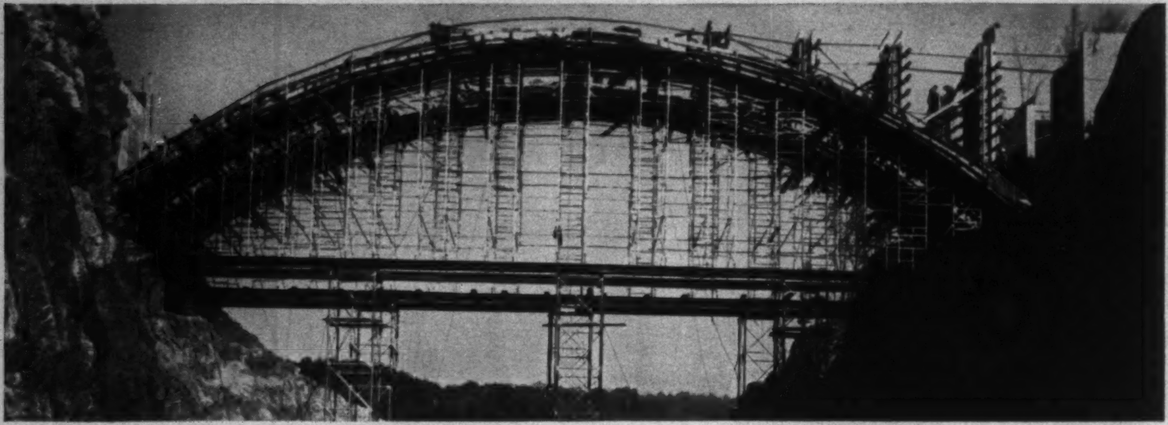
For details, call your nearby I-R representative.

Ingersoll-Rand
11 Broadway, New York 4, N.Y.
Tools plus AIRengineering
increase output per man

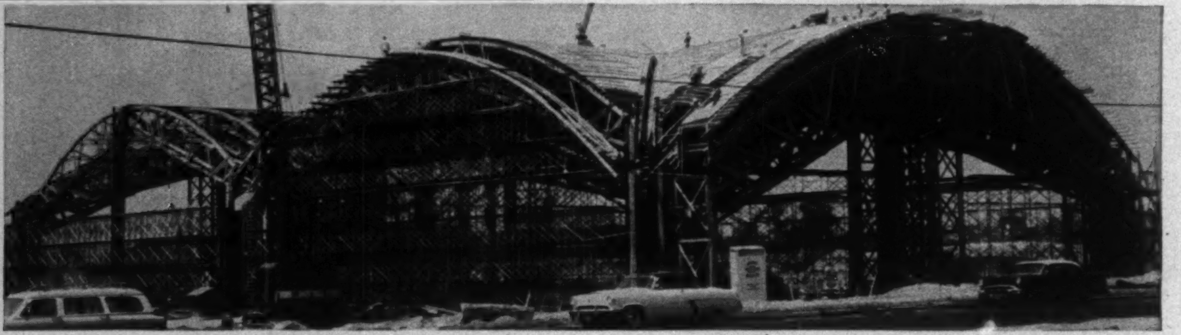
57A-18

CIRCLE 135 ON READER SERVICE CARD

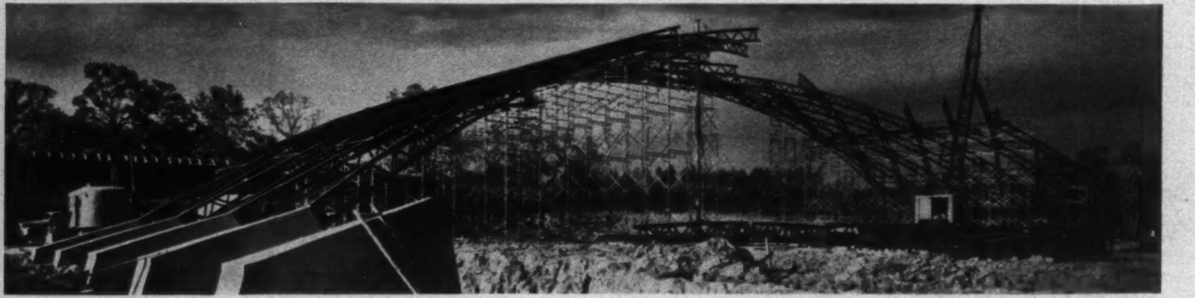
Shoring Methods . . . by PS CO.



TWO-UP SHORING FOR HEAVY BRIDGE—For the new, 143′-long concrete bridge at Hogback Dam, Riverton, Conn., PS CO. Extra Heavy Duty Shoring is first assembled in 6 towers, 48′-high to carry a total load of 32,000 lbs. per leg. I-beams are set on top. Then "Trouble Saver"® 4′-wide Heavy Duty Shoring frames are arranged atop the I-beams. Frames support 9,000 lbs. per leg, imposed by columns and two ribbon arches 8′-wide by 1½′ to 3′-thick, 34′ center height. White Oak Excavators, contractor.



LONG, HIGH, EDGE-BEAM SUPPORT—Shoring of long, concrete edge-beams, 22″-wide by 4′-thick, varying from 140′ long by 70′ high to 150′ long by 75′ high, is easily accomplished with standard "Trouble Saver"® Sectional Steel Shoring. Frames of various heights are used to match the curve of the beams. Gilbane Building Company, contractor, for the first fully mechanical Post Office, Providence, R.I. Building is to be 420′ by 300′.



CRIBBING FOR STEEL LAMELLA ROOF—For the Ladue H.S. Auditorium, "Trouble Saver"® Steel Shoring is rapidly assembled in towers to form temporary cribbing during erection of steel girders of the lamella-type roof. Shoring towers, with frames spaced 5′ apart, are placed to hold girders during positioning by one crane. Workers secure opposite ends to adjoining members already placed. Steel arches are 252′-long, abutment to abutment, center height 50′. Christina Constr. Co., gen. contr., Kroeger Erection Co., steel erectors.

THE PATENT SCAFFOLDING CO., Inc.

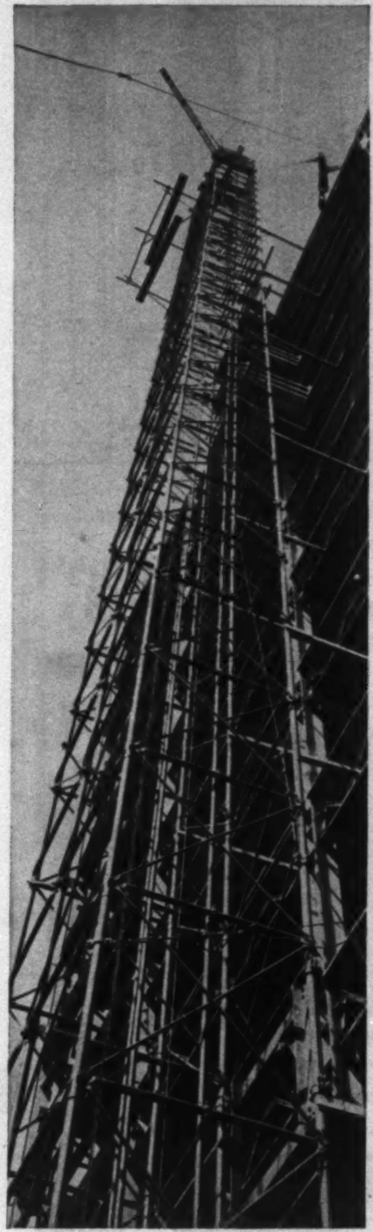
38-21 12th Street, Dept. ENR, Long Island City 1, New York

1550 Dayton St., Chicago 22. • *Branches in all principal cities* • 6931 Stanford Ave., Los Angeles 1.
IN CANADA: CANADIAN PS CO., 329 DUFFERIN ST., TORONTO

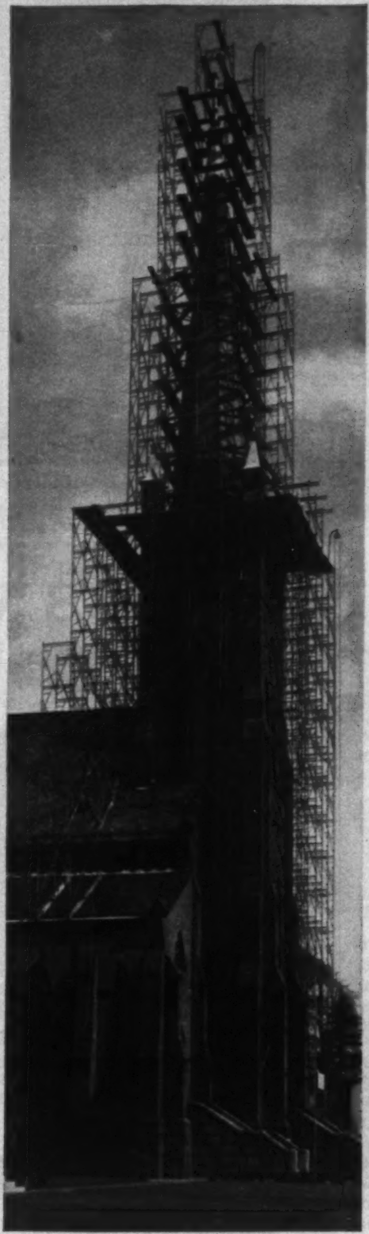
Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

SALES RENTALS

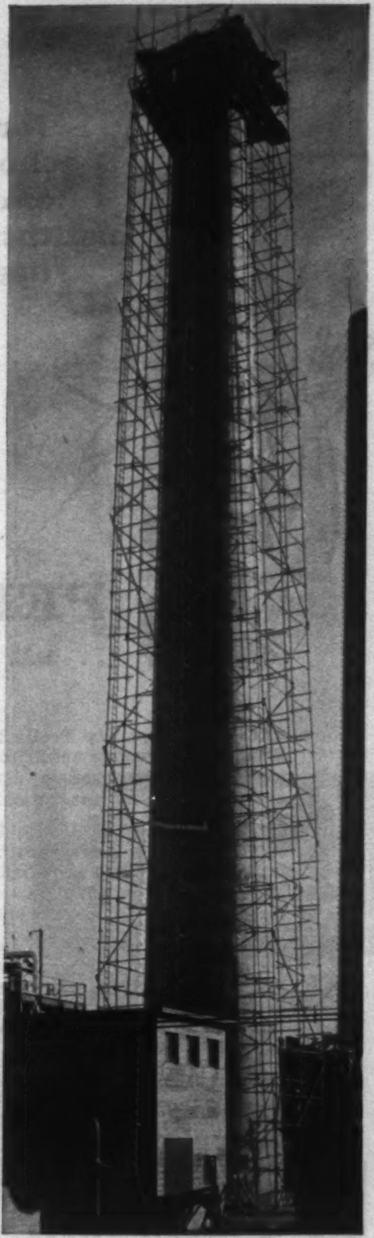
Scaffolding Methods . . . by PS CO.



FAST MATERIAL LIFT—This 227′-high "Gold Medal"® Steel Hoist Tower is used by The Wm. Simpson Constr. Co. to move materials rapidly up when and where needed on the First Federal S. & L. Ass'n Bldg., Los Angeles.



OVERALL FOR STEEPLE JOB—To provide Eastern Renovating Contractors with safe, stable, wide, overall working platforms for steeple repairs, "Trouble Saver"® Scaffolding is built up quickly from the ground and roof of this church in Wallingford, Conn.



UP HIGH FOR WRECKERS—Here, "TubeLox"® tube and coupler Scaffolding is easily erected from only four basic parts to provide the height necessary for demolition of this concrete chimney in Torrance, Calif. Emsco Concrete Cutting Co., contractor.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

SALES RENTALS

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Dept. ENR, Long Island City 1, New York
1550 Dayton St., Chicago 22 • Branches in all principal cities • 6931 Stanford Ave., Los Angeles 1
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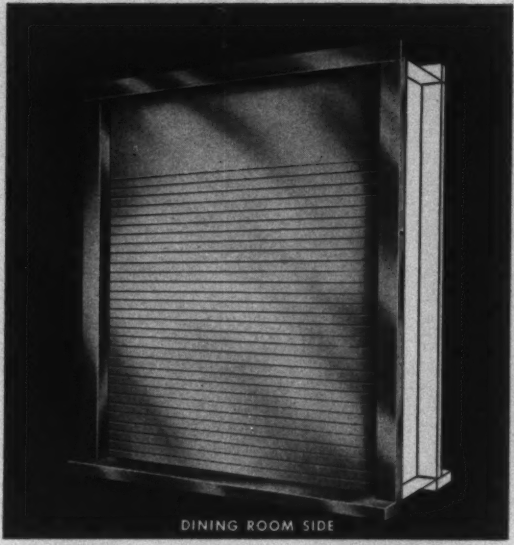
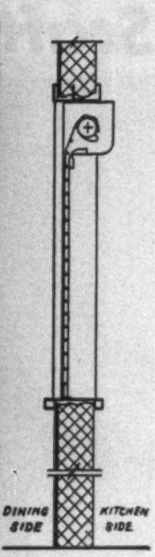
CIRCLE 137 ON READER SERVICE CARD

for
school
and
institutional
use





PEELLE ROLLING ALUMINUM PASS WINDOW UNIT

Combined in the above completely assembled unit are a stainless steel frame, guides and a shutter of extruded aluminum flat-slats which rolls compactly into the head.

3 PEELLE PASS WINDOWS

...all with integral frames for easy installation

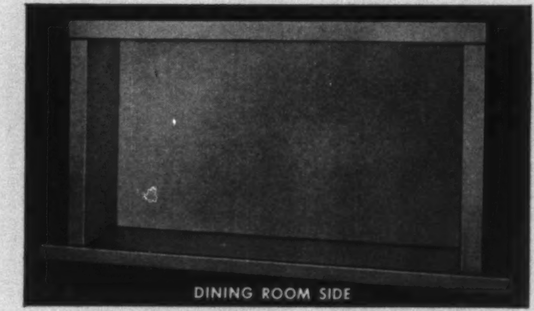
- **ARCHITECTS** specify Peelle Pass Windows to reduce specification and design time and to assure owner of a quality installation.
- **CONTRACTORS** like Peelle Pass Windows because they save estimating and buying time and eliminate duplication of installation—when frame is installed—panel is installed.
- **OWNERS** like Peelle Pass Windows because they give maintenance-free, EASY operation. Quality design and workmanship permit easy cleaning with no cracks and crevices to act as dirt catchers.

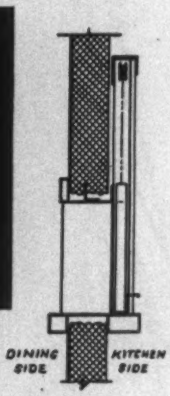
These desirable features account for the wide-spread use of Peelle Pass Windows in so many carefully planned school and institutional dining rooms and cafeterias. The three basic window designs shown at the right, allow great flexibility of choice in planning service access between kitchen and dining room.

Send for complete details on all 3 Peelle Pass Windows

ENGINEERED FOR THE BUILDING INDUSTRY
PEELLE-RICHMOND PRODUCTS

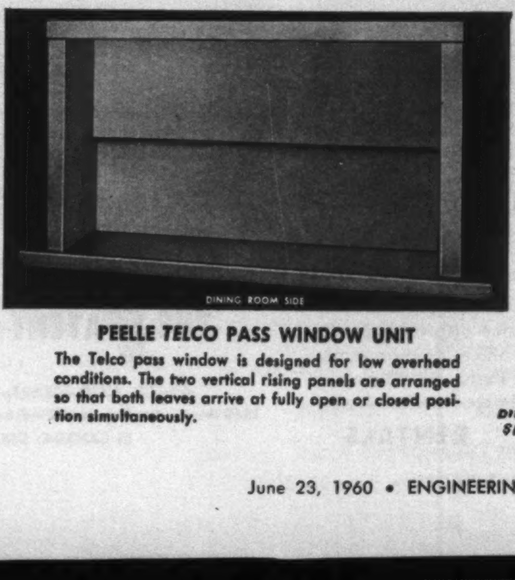
THE PEELLE COMPANY
47 Stewart Avenue, BROOKLYN 37, N. Y.
4037 N. Kedzie Ave., CHICAGO 18, ILL.
Northwest F Street, RICHMOND, IND.
OFFICES IN PRINCIPAL CITIES

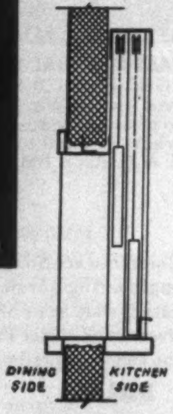




PEELLE ORIGINAL PASS WINDOW UNIT

The above completely assembled unit consists of a hollow metal door with steel guides and frame, designed for quick, economical installation. Special extended sills furnished when specified.

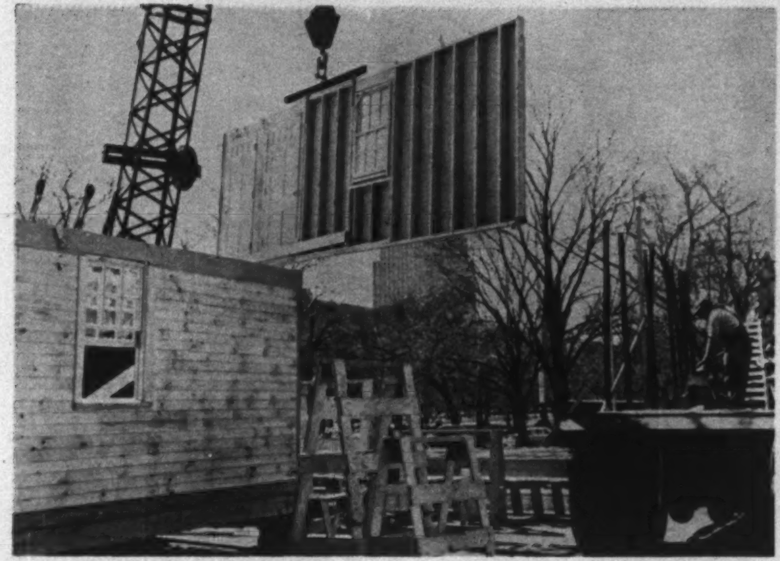




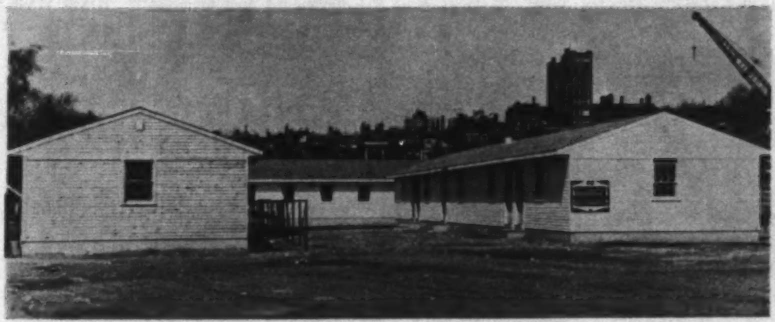
PEELLE *TELCO* PASS WINDOW UNIT

The Telco pass window is designed for low overhead conditions. The two vertical rising panels are arranged so that both leaves arrive at fully open or closed position simultaneously.

CIRCLE 138 ON READER SERVICE CARD



Pre-fab Field Offices . . .



. . . Go Up in Colonial Style

These construction company field offices were designed in New England Colonial style to look at home in the middle of Boston Common during construction of underground garages for the city. Each building was erected in less than four hours.

The clapboard buildings, painted white, are a new departure in construction shanties aimed at dressing up construction sites where a builder must present a neat appearance at all times.

Knocked down into the original panels, the buildings can be transported from one location to another with ease at the end of each job. GROSSMAN ENGINEERING & COMPONENTS DIV., QUINCY, MASS.

Wheel Tractor Carries Side Boom

A wheeled tractor, the Blue Ox-Side Boom is designed for use in pipe stringing, lowering-in operations, oil and gas pipeline construction and repair work.

The unit features a low center of gravity for maximum stability under extreme boom loads. This, combined with the vehicle's hydraulically controlled counterweight and special 15-in. frame give the machine a capacity lift of 17,500 lb.

Features of the unit include four-wheel drive and four-wheel steer plus independently (or simultaneously) controlled right and left hand brakes for a short turning radius and increased maneuverability. High flotation tires are used. The unit can travel at speeds up to 47 mph, and has a creep speed of one-half mile per hour. Optional equipment includes backfill blade, hydraulic axle stabilizers, 16:00x20-14 ply tires. FWD CORP., CLINTONVILLE, WIS.

(*New Products continued p. 140*)

In the field of

HYDRAULIC DREDGING

GAHAGAN

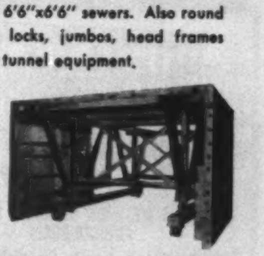
a leading name for over 50 years

**Gahagan Dredging Corporation,
90 Broad St., New York 4, N. Y.
Write, wire or phone Whitehall
3-2558. Cable "Walgahagan".**

POSEY WORKS *FOR BETTER-*

TUNNEL FORMS

Adjustable box forms for 13'x9', 11'x9', 8'x8', and 6'6"x6'6" sewers. Also round forms, air locks, jumbos, head frames and other tunnel equipment.



For FREE illustrated catalog showing job applications, write:

POSEY IRON WORKS INC

Custom Fabrication For Over 50 Years

DIVISIONS:
- Iroquois Asphalt Plants
- Mixers and Blenders
- Tunnel Forms
- Industrial Heating
- Foundry
- Large OD Steel pipe

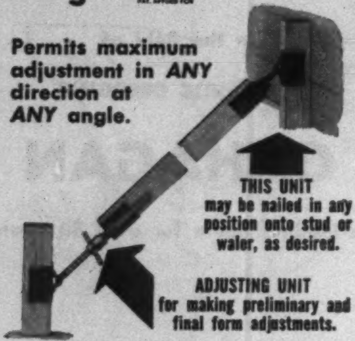
561 S. PRINCE STREET LANCASTER, PA.

FOR QUICK AND POSITIVE FORM ALIGNMENT

New! SUPERIOR Adjusta-Brace

PAT. APPLIED FOR

Permits maximum adjustment in *ANY* direction at *ANY* angle.

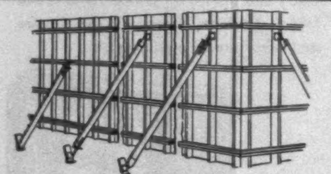

THIS UNIT
may be nailed in any position onto stud or waler, as desired.
ADJUSTING UNIT
for making preliminary and final form adjustments.

Providing a swivel action for quick positioning and adjustment, the Superior Adjusta-Brace consists of two units, connected by a 2 x 4, 2 x 6 or a 1" i.d. pipe. Either unit may be attached to the wall form, or to the stake, but it is usually more convenient to use the Adjusting Unit at the stake.

The Adjusting Unit has a patented double-wing nut, working on a 1" diameter rod, with an adjustment of 12". The design of this bracket and the method of attachment are such that it works as a universal joint to take any required position. The companion non-adjusting unit is also designed to take any position that field conditions may impose.

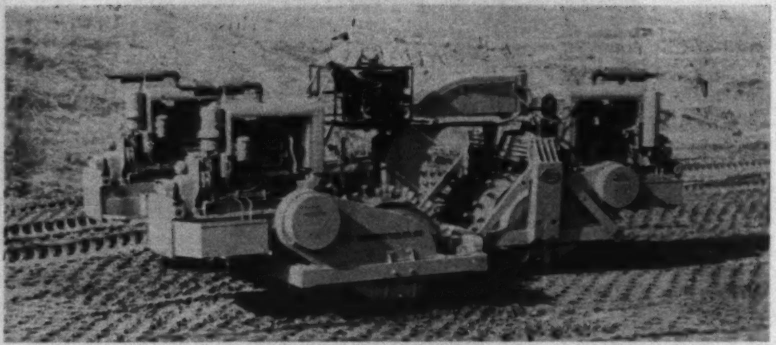
The Superior Adjusta-Brace is light in weight, durable, and inexpensive. Contractors report substantial savings in time and labor compared to the conventional method of bracing.

Write for prices & Bulletin AB-1.



VARIOUS METHODS OF USING SUPERIOR ADJUSTA-BRACE
Nailing brackets may be fastened to stud or wale, and stake.

SUPERIOR
CONCRETE ACCESSORIES, INC.
9301 King St., Franklin Park, Ill.
New York Office
39-01 Main St., Flushing 54, N. Y.
Houston Office
4101 San Jacinto, Houston 4, Tex.
West Coast Plant
2100 Williams St., San Leandro, Calif.

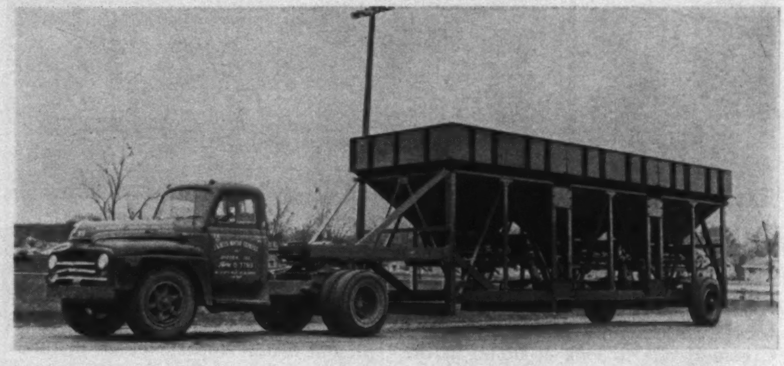


Roller Needs No Turn-Arounds

A self-propelled sheepsfoot roller, the SP-3DT, weighs 81,000 lb empty and has a rolling width of 15 ft 9 in. Three 130-hp diesel engines drive the roller's three drums. Speeds from 1.5 mph to 7 mph in both forward and reverse eliminate turn-arounds at the end of a pass.

Each drum oscillates to provide uniform compaction pressures. Drums are 5 ft in dia and 5 ft wide. Tips of the tamping feet are replaceable when worn. Special length tamping feet are available to meet Bureau of Reclamation specifications. Weight per ft of drum length is 4,700 lb when roller is empty.

The roller has torque converter drives with power shift, three-speed full-reversing transmissions. Final drum drives are heavy-duty differentiating axles and roller chains. A "gooseneck" hitch permits the roller to be disconnected into three units for transport. Bros, Inc., Road Machinery Div., 1057 Tenth Ave. S. E., Minneapolis 14, Minn.



Feeder Bins Come in Small Units

The Model 817 "Add-A-Bin" is a cold-aggregate feeder for asphalt plants that is constructed on a "building block" design, readily permitting combinations of two, three, four or more units. Each has an 8-ton capacity.

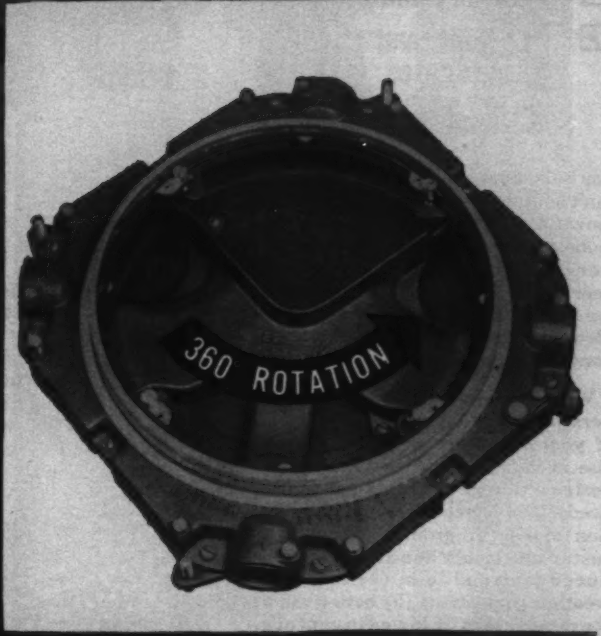
Through the addition of bin extensions—in 2-, 4- and 6-ft increments, capacity may be increased at the rate of 4-tons-per-ft of extension until each bin has a capacity of 32 tons.

Each bin is equipped with a Barber-Greene Model 432 belt feeder and, when used in any combination of any number of bins, total and proportional control of the aggregate feed may be achieved. This is made possible by individual gear motor drives on each feeder or a single gasoline engine, driving each feeder through interlocked lineshaft drives.

As many as three 817 bins may be combined on a single axle portable chassis, capable of over-the-road towing at 25 mph. The units are adaptable to any charging method. The 8x10-ft bin opening is specially suited for front-end loading, and makes crane charging easy. Bins are made of ¼-in. steel plate and are independently supported by ⅜-in. steel angles rigidly braced on an all-welded structural frame. The Model 375 gathering conveyor is 24-in. standard. Barber-Greene Co., 400 No. Highland Avenue, Aurora, Ill.

(*New Products continued p. 142*)

NEW NATIONAL ELECTRIC NXZ JUNCTION BOX “Lazy Susan” Partition Ends Repositioning Problems



The unique “Lazy Susan” partition in the new National Electric “NXZ” Junction Box ends all the costly repositioning problems encountered when a box is installed with partitions not properly oriented with the underfloor raceway system. By removing two screws inside the “NXZ” box and rotating the “Lazy Susan” partition, the costly procedure necessary to reposition the box is eliminated. Contractors report a substantial savings when using this improved method.

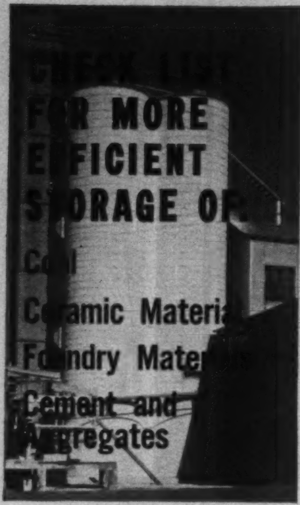
In addition to the ease of realigning the box, the “NXZ” line offers the advantage of being able to adjust the box height without removing the cover . . . using an ordinary screw driver. As with all National Electric Junction Boxes, a galvanized steel collar around the leveling ring keeps concrete from bonding to the ring, thus allowing downward adjustment.

National Electric “NXZ” Junction Boxes are part of a complete underfloor raceway system suitable for all types of construction. For complete details on underfloor raceway systems, write to *National Electric Division, H. K. Porter Company, Inc., Porter Building, Pittsburgh 19, Pa.*

NATIONAL ELECTRIC DIVISION **PORTER** ***H. K. PORTER COMPANY, INC.***

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

CIRCLE 141 ON READER SERVICE CARD



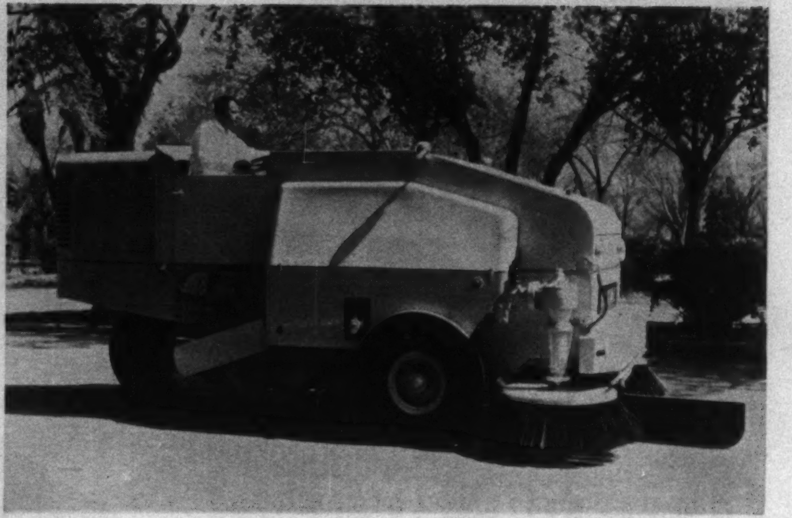
For bulk storage of any material, you can't beat the versatility of a Marietta storage system to save you time, money, space and materials. Marietta Concrete Silo Systems are engineered to your exact requirements for safe, economical storage and complete integration with any materials handling equipment.

When you consult Marietta, trained personnel make an exhaustive study of your operation, define your precise needs and then recommend and design a storage system to meet these needs. You benefit from (1) elimination of bag or ground storage; (2) faster materials handling; (3) reduced material loss; (4) complete weather protection; (5) better use of storage area; (6) lower inventory, and (7) lower insurance rates.

For catalog and complete information on how Marietta Industrial Silos can modernize your bulk materials storage, simply check below the type of material you want to store, clip and attach to your letterhead. Your request will receive our immediate attention.

Send Catalog and Information
☐ Sand & Gravel
☐ Cement
☐ Coal
☐ Ceramic Materials
☐ Other

Marietta
CONCRETE DIVISION
AM AMERICAN-MARIETTA CO.
Marietta, Ohio

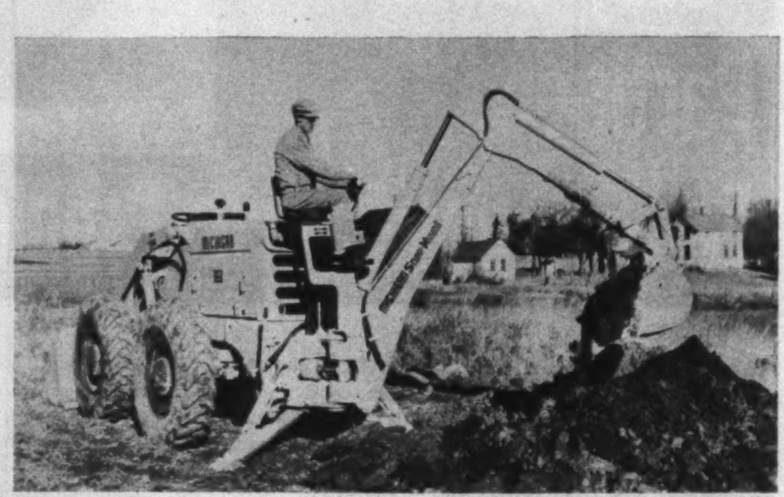


Three-Wheeled Street Sweeper

The Model 520 is a 4-cu-yd street sweeper. It is available with single or double gutter brooms and single or dual controls. Three-wheel design is said to insure maximum maneuverability.

Rubber elevator drive chains are offered with a 10,000-mile guarantee, and are built around a core of high alloy steel woven cables.

Other features include: full floating pickup broom suspension to maintain sweeping pressure automatically on all surface contours; clam shell bucket action dumping; hydraulically operated power brakes and hydraulically operated steering. WAYNE MANUFACTURING CO., 1201 E. LEXINGTON AVE., POMONA, CALIF.



Backhoe Goes on Without Tools

A hydraulic backhoe attachment for Michigan Models 55A, 75A and 85A tractor shovels can be snapped on or off in less than a minute without tools, according to the manufacturer.

The unit has 180-deg continuous swing, and 180-deg bucket tilt. The machine also features a 12-ft 4-in. digging depth, 10,000-lb breakaway at the bucket teeth, and 15-ft 6-in. reach from center rotation. A counterbalance is included for use when the hoe is disconnected.

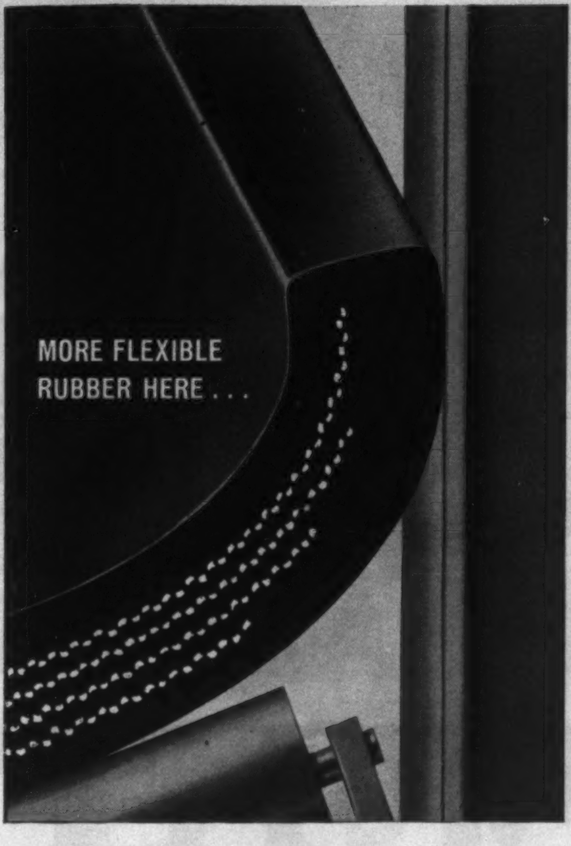
The backhoe will take a variety of buckets, which snap on or off in half a minute or less. CONSTRUCTION MACHINERY DIVISION, CLARK EQUIPMENT CO., PIPESTONE RD., BENTON HARBOR, MICH.

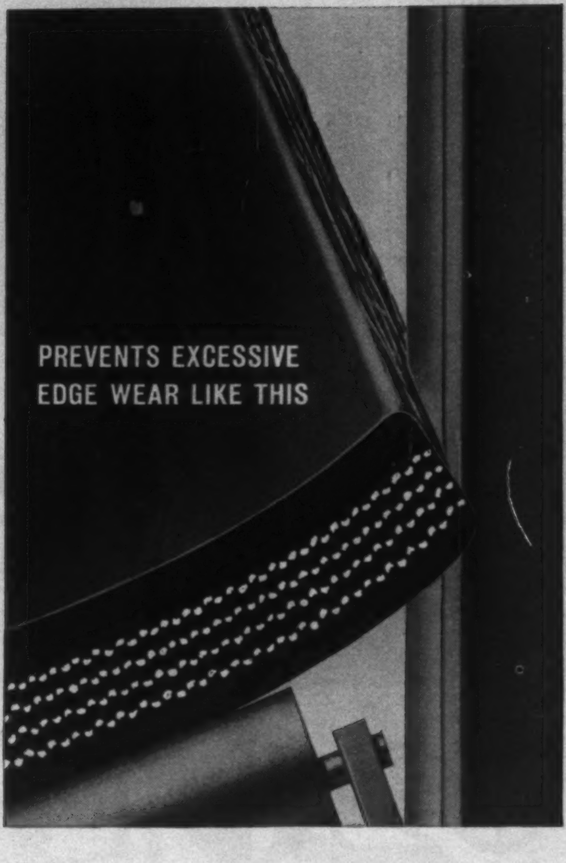
(*New Products continued p. 46*)

Quaker Thermoid

"COLEDGE" BELTING

REDUCES EDGE WEAR, ADDS MILES OF USE!





Improper training can ruin a conveyor belt faster than any other abuse. Riding up and rubbing against a frame member soon wears away the stiff edge of conventional belting and exposes the carcass plys to moisture, mildew, dirt and eventual ply separation. "Coledge" belt construction was developed by Thermoid Division—to overcome this weakness and extend belt life.

"Coledge" construction puts plenty of extra rubber on the edges where it counts most . . . the plys are stepped back to make a more flexible edge that rides with the punches when misalignment occurs. This "Coledge" construction can put many extra miles on your system, especially in coal fields and sand and gravel pits where most belt failures are the result of excessive edge wear. Exclusive with Thermoid Division, "Coledge" construction is available in any standard type belt your application may require.

So, if you have an edge-wear problem with conveyor belts, specify "Coledge" construction. See your Thermoid Division industrial distributor for technical data or assistance, or write *Thermoid Division, H. K. Porter Company, Inc., 200 Whitehead Road, Trenton 6, New Jersey.*

THERMOID DIVISION PORTER **H. K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

CIRCLE 143 ON READER SERVICE CARD

20 FEET

a new sewer is going in, but on the street it's traffic and business as usual

With Armco Liner Plates supporting a tunnel, you keep work underground and out of the way. When you tunnel, you save the surface; keep the traffic moving without interruption. And when you tunnel with Armco Liner Plates you use the strongest liner plates made—pound for pound. Send coupon for details about tunneling the Armco way, with safe, efficient, economical Armco Liner Plates. Armco Drainage & Metal Products, Inc., 7010 Curtis Street, Middletown, Ohio.

DOWN,

Steel

New steels are born at Armco

Liner Plate sections are small enough for easy handling.

ARMCO DRAINAGE & METAL PRODUCTS, INC.
7010 Curtis Street, Middletown, Ohio

SEND MY COPY OF THE NEW ARMCO LINER PLATE MANUAL

NAME ______ TITLE ______

ORGANIZATION ______

STREET ______

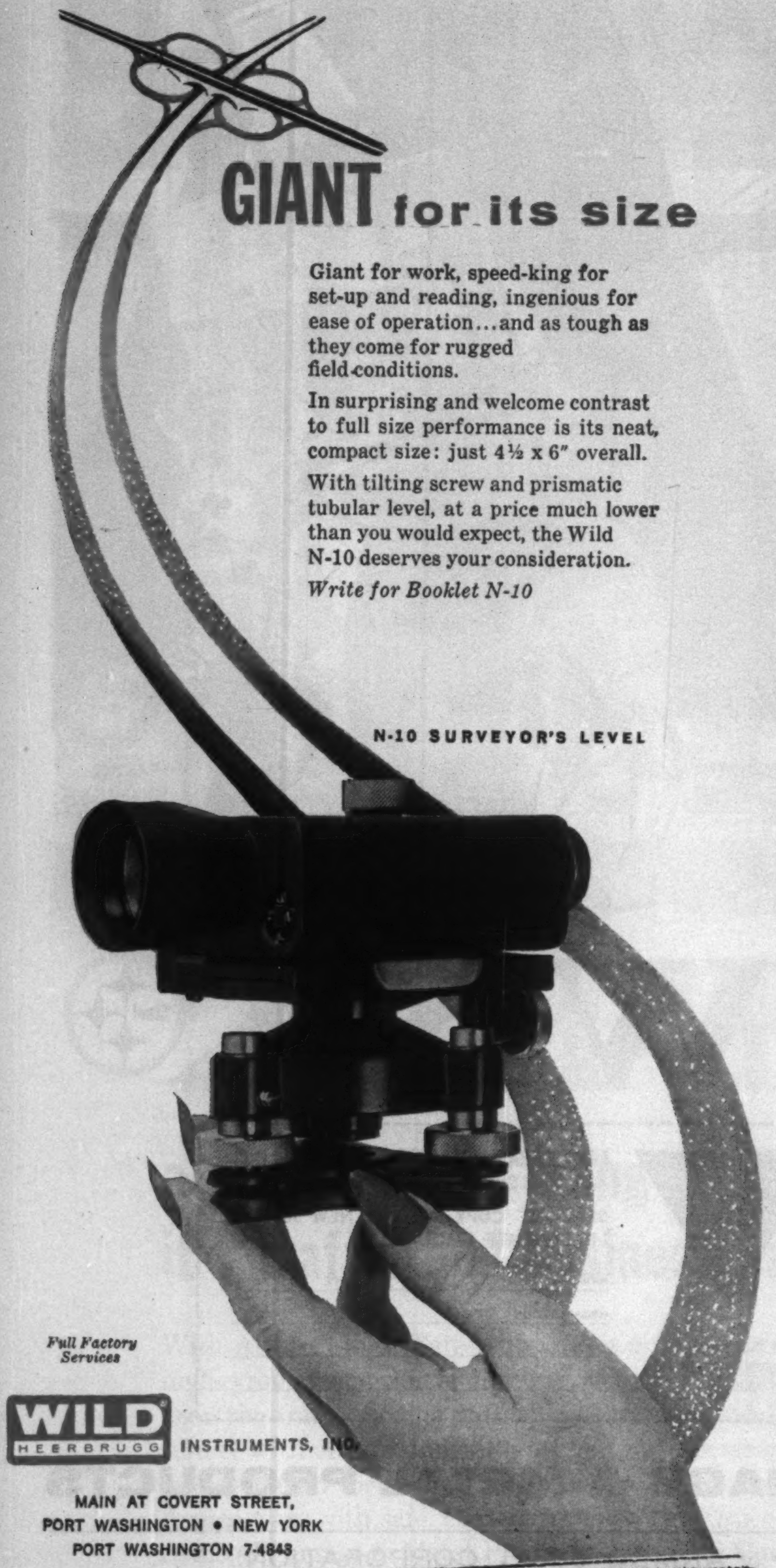
CITY ______ ZONE ______ STATE ______

ARMCO DRAINAGE & METAL PRODUCTS

ARMCO

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation


GIANT for its size

Giant for work, speed-king for set-up and reading, ingenious for ease of operation...and as tough as they come for rugged field-conditions.

In surprising and welcome contrast to full size performance is its neat, compact size: just 4½ x 6" overall.

With tilting screw and prismatic tubular level, at a price much lower than you would expect, the Wild N-10 deserves your consideration.

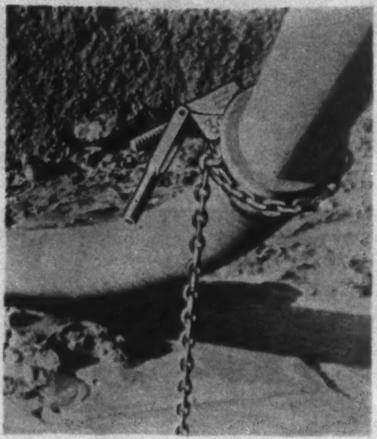
Write for Booklet N-10

N-10 SURVEYOR'S LEVEL

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET,
PORT WASHINGTON • NEW YORK
PORT WASHINGTON 7-4843



Chain Clamp Fastens Rubber Sleeve to Pipe

An easily mounted chain sleeve-clamp is designed for use wherever hydraulic pipelines are joined by rubber sleeves to provide flexibility in the line.

The clamp can be used in dredging operations, hydraulic mining of sand and gravel, and similar jobs.

It consists of a triangular, malleable-iron head, a 1-in. high-carbon-steel screw, a swivel handle, an electric-welded chain and a forged steel hook. A few turns of the handle draws up the screw and chain, applying adequate pressure to secure the rubber sleeve.

The clamp is intended to be attached or detached in a moment. One size clamp fits pipe from 6 in. to 30 in., ID. Black Brothers Co., Mendota, Ill.

Model B Tournapull Has New Engine, More Power

The 23-cu yd Model B Tournapull now has a 430-hp V-12 diesel engine as standard equipment. This represents an increase of 28% in horsepower over the previous model.

The V-Power Model B has new, larger final drive gears. Other changes include a new radiator with 50% more cooling surface, a three section hood that one man can remove, and twin Donaldson dry-type air cleaners as standard equipment. It also has a high-inertia steering motor.

Capacity of the B Fullpak scraper has been increased. Struck rating is up from 21 to 23 cu yd. Heaped capacity is 29 cu yd.

The engine, a model 12V-71 built by General Motors, is a 2-stroke design of 851 cu in. displacement. It develops its 430 hp at 2,100 rpm and reaches a torque peak of 1,210 ft-lb at 1,200. LeTourneau-Westinghouse Company, Peoria, Ill.

(*New Products continued p.* 148)

OZALID *NEWSLETTER*

NEW IDEAS TO HELP YOU WITH ENGINEERING REPRODUCTION AND DRAFTING

Standard materials, plus new thinking, result in big time and cost savings.

How to break the halftone costs barrier

Some of the sharper repro men looking to cut the high cost of using halftones in quantity have come up with this little timesaver that goes for pennies per halftone. Here was the problem: 200 rush copies of 16 technical photographs were needed for a service manual . . . a total of 3200 prints. This job would usually run about $2,000 and take ten days . . . that was too long and cost too much.

A bright lad thought about their Ozalid whiteprinting equipment and worked out this procedure: First an 8″ x 10″ screened film positive was made by projection from a 4″ x 5″ negative, emulsion away from emulsion. This insured proper orientation of the print in the final stage.

Next, the film positive and Ozalid black-line plastic-coated paper (105SZ) were processed in an Ozalid Printmaster 810 at a rate of 12 feet per minute. The 42-inch width of this machine permitted two operators to work simultaneously, cutting total production time virtually in half! The choice of Ozalid paper Type 105SZ was an excellent one. It gave crisp; black-line images of great density due to the paper's plastic coating. The entire project took just under a fast six hours instead of the usual ten days, and cost about $100.

Total savings: $1900 and 9½ days of production time. Pretty smart, we think. By the way, we've got sample packages available for the asking that might very well give you the same dramatic results. Why not write us at Ozalid, Box YY6, Johnson City, New York. We'll be glad to help.

Looking for a fast case of the blues?

The happy kind, we mean. The clean, rich, decisive blue image that Ozalid's new Super-Speed Blue-Line (200SS) gives. And when we say fast, that's exactly what we mean. *Poor originals are copied up to ten feet per minute faster than with regular copy papers.*

This is the first Ozalid copy paper specifically designed for copying semi-opaque originals at higher speeds . . . at no sacrifice of line density in any sense!

But what does all this mean in practical benefits, other than increased production at no loss in quality?

Well, for one thing, it means that you can now do a fine job on semi-opaque material, such as one-sided letters, documents and bulletins, at the lowest cost of any copying process . . . even if they're printed on bond papers!

Another benefit is the clean, readable copies you can now produce from soiled, yellowed documents and low-translucency materials much faster than ever before.

Is that all? Not by a long shot. 200SS actually turns low-powered ultraviolet machines into pretty fast units. And the faster printing speeds mean faster return of the original after each cycle.

Why not try this superb, high-density blue-line paper today? It really makes sense. Just call your local Ozalid representative for a demonstration.

***Ozalid**—Division of General Aniline & Film Corp. • In Canada: Hughes-Owens Co., Ltd., Montreal*

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Gives you the
QUICKEST
STRONGEST
SAFEST
supports for slab-decking
AT LOWEST COST

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- ACROW, the world's largest formwork specialists offer features, benefits, advantages based on world-wide experience.
- ACROWSPAN... with only two basic components... gives you the greatest range. Built-in camber automatically set. Highest load carrying capacity. Work with ease on widest flange.
- ACROWSPAN is especially ideal when used in combination with high-load-capacity ACROW Steel Vertical Shore.

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CIRCLE 11 ON READER SERVICE CARD

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ARCTIC BOY
portable water coolers

... built to take a beating on construction jobs, in mines, on the farm, railroad crews, on service trucks ... wherever men work and the going is rough.

They keep drinking water cool and sanitary, keep worker efficiency up. And note these features:

- HOT DIPPED Galvanized or stainless steel insets
- Sparkleen plastic liner... non toxic, prevents corrosion
- Large opening, easy to ice and clean
- Extra large insulation space

Send for free booklet "Care and Use of Your Cooler." Write Dept. C-32
SCHLUETER MFG. CO. St. Louis, Mo.

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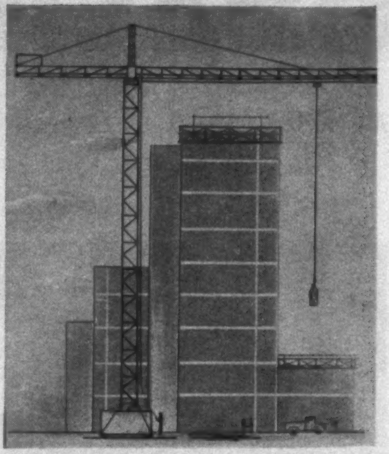


Rail-Mounted Tower Crane Can Rotate a Full Circle

The Shlagromatic Tower Crane, Mark I, designed for fast handling of construction materials extends to 100-ft height. The Mark I has a horizontal jib with maximum reach of 65 ft for a one-ton load. Rail-mounted, it can rotate 360 deg.

The operator runs the electrically powered crane through "push-button" remote control. SHLAGRO STEEL PRODUCTS CORP., SOMERVILLE 43, MASS.

Big and Little Pumps For Underwater Uses

A new submersible water pump is called more efficient than any pump previously made by its manufacturer. It can be obtained in a range of sizes from ⅓ hp to 1½ hp with capacities up to 1,700 gph.

Design features include corrosion-resistant bronze and stainless steel construction and solid bronze die-cast impellers.

The pump is available with either oil or water lubrication to suit local requirements.

The same manufacturer has also introduced a line of 40-hp to 125-hp, submersible pumps.

These range in pumping capacities from 400 gpm to 3300 gpm. All are suitable for installation in 12-in. or larger wells.

The pump bowls are constructed of enamel-lined cast iron; the impellers are of smooth bronze. The motor has plastic-covered windings designed for continuous underwater operation. There is a special plastic and ceramic sand seal which protects the motor against abrasives and corrosive water. SUMO PUMPS, INC., BROWN HOUSE ROAD, STAMFORD, CONN.

(New Products continued p. 152)

HOW TO SAVE TIME AND MONEY

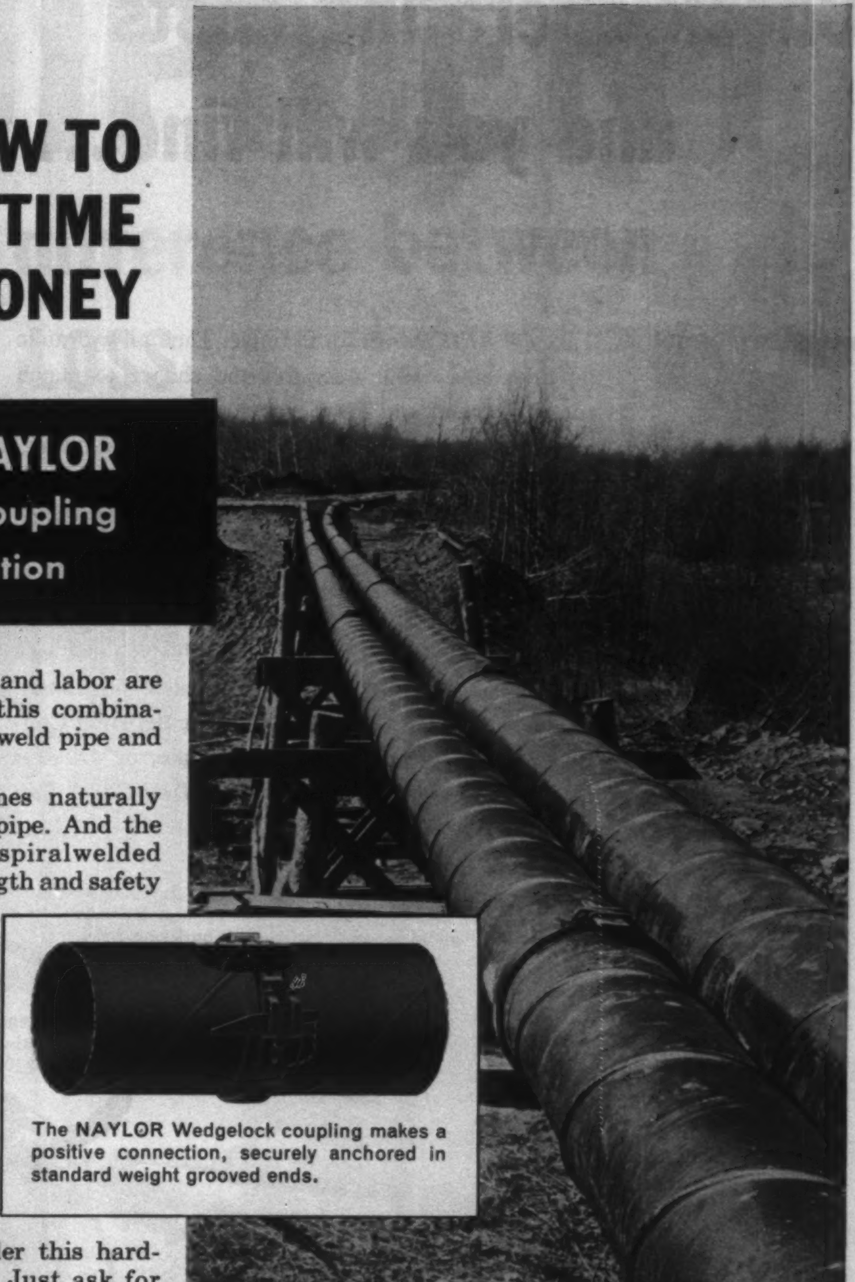
Use This NAYLOR Pipe and Coupling Combination

Where savings in time and labor are important, you'll like this combination of NAYLOR Spiralweld pipe and Wedgelock couplings.

Easier handling comes naturally with this light weight pipe. And the NAYLOR lockseamed-spiralwelded structure adds the strength and safety your job requires.

With the Wedgelock coupling, you not only save time in making connections, but also simplify the work involved since a hammer is the only tool required to connect or disconnect it.

For air, water or ventilating lines, it will pay you to consider this hard-working combination. Just ask for Bulletin No. 59.



The NAYLOR Wedgelock coupling makes a positive connection, securely anchored in standard weight grooved ends.

NAYLOR PIPE *Company*

1248 East 92nd Street, Chicago 19, Illinois

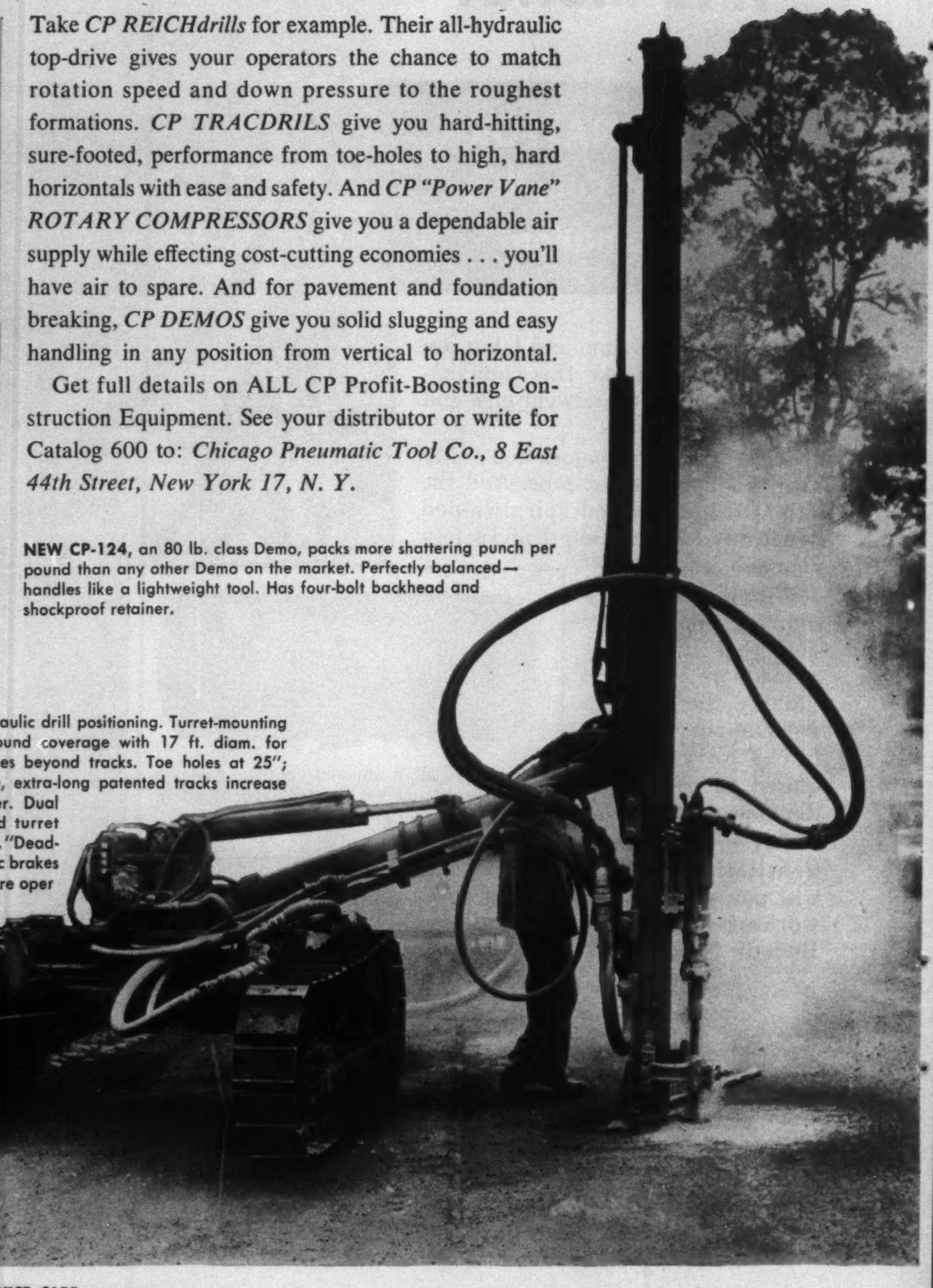
Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

Check operating costs and you will find... CP

Take *CP REICHdrills* for example. Their all-hydraulic top-drive gives your operators the chance to match rotation speed and down pressure to the roughest formations. *CP TRACDRILS* give you hard-hitting, sure-footed, performance from toe-holes to high, hard horizontals with ease and safety. And *CP "Power Vane" ROTARY COMPRESSORS* give you a dependable air supply while effecting cost-cutting economies . . . you'll have air to spare. And for pavement and foundation breaking, *CP DEMOS* give you solid slugging and easy handling in any position from vertical to horizontal.

Get full details on ALL CP Profit-Boosting Construction Equipment. See your distributor or write for Catalog 600 to: *Chicago Pneumatic Tool Co., 8 East 44th Street, New York 17, N. Y.*

NEW CP-124, an 80 lb. class Demo, packs more shattering punch per pound than any other Demo on the market. Perfectly balanced—handles like a lightweight tool. Has four-bolt backhead and shockproof retainer.



G-900 TRACDRIL. All-hydraulic drill positioning. Turret-mounting of boom permits 180° ground coverage with 17 ft. diam. for along-side drilling 33 inches beyond tracks. Toe holes at 25"; breast holes at 11ft. Wide, extra-long patented tracks increase stability and towing power. Dual controls at boom end and turret save steps, increase footage. "Deadman" controls and automatic brakes keep drill from shifting, insure operator safety.

CIRCLE 150 ON READER SERVICE CARD

EQUIPMENT

means the difference between

PROFIT AND LOSS

CP-365 "POWER VANE" ROTARY COMPRESSOR. 365 cfm, 100 psi teamed with CP-117 Demo's for fast action. Other "Power Vane" Rotaries in capacities of 85, 125, 250, 600 and 900 cfm. Gasoline or diesel drive.

T-650 TRUCK-MOUNTED REICHdrill, hydraulic, top-drive rotary, makes hole to 7⅞" diam.; down-pressure 30,000 lbs. Other models, truck or crawler mounted; hole sizes to 16" diam.; down-pressures to 90,000 lbs.

CP

Chicago Pneumatic *8 East 44th Street, New York 17, N. Y.*

AIR COMPRESSORS • PNEUMATIC TOOLS • AIR WRENCHES • REICHdrills • AIR-BLAST BITS • ROCK DRILLS

THEY
SEAL
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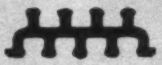
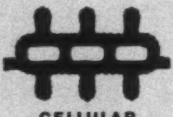
STRETCH
THEY
SHIFT

WATER SEALS WATER STOPS
have more years of proved performance!

And Water Seals water stops have more miles of proved performance, too! This record, plus the ease of application and the broad variety of shapes and sizes of Water Seals water stops are all the proof you need of their desirability for your own concrete jobs. If you are after truly water-tight sealing between successive concrete pours, be sure to specify Water Seals water stops. They stand up under high temperatures and heads, even under extremes in shifting and stretching. They are unaffected by acids, alkalies, organic chemicals. Full engineering data and dimension drawings available immediately. Use the coupon.


LABYRINTH
Water Stops. Unique, low cost installation! No form splitting required: just nail 'em in place! 2, 3 or 4 rib styles.

FLEXSTRIP
Water Stops. For horizontal or vertical construction joints, especially under extreme conditions of separation. Variety of widths.


CELLULAR
Water Stops. For expansion joints where shearing stress is anticipated. Three rib style most popularly used.

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Water Seals, Inc.
9 South Clinton Street
Chicago 6, Illinois
Send engineering data and literature on Water Seals water stops.

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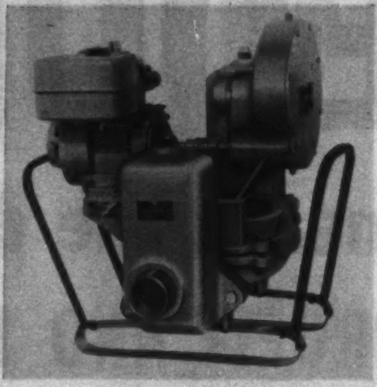


Diaphragm Slurry Pump Made of Aluminum Alloy

A lightweight diaphragm pump with 3-in. connections and a capacity rating of 4,300 gph is now available. It is equipped with either a 3-hp gasoline engine or 1½-hp electric motor.

Lightness is achieved by aluminum alloy construction. For steady footing, pumps are mounted on vibration-damping spring skids.

The pumps are suitable for industrial and construction applications where continuous pumping of sludge, slurries, and debris-laden liquids is required. Suction and discharge air chambers eliminate "jerking" of suction hose and produce smooth flow from discharge lines. Midland Products Co., Route Seventeen, Mahwah, N. J.

Truck Cranes Available In Three Size Groups

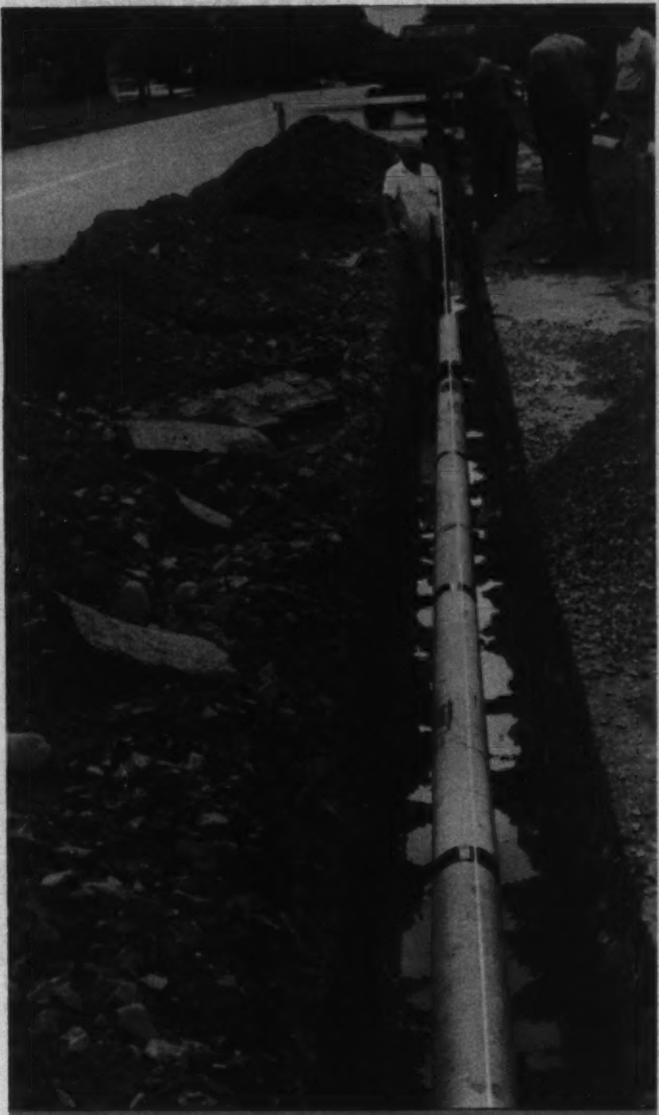
Quick-Way truck cranes and shovels are in three groups: 12½, 10, and 8½-ton machines in the first group; 20, 18, and 15-ton units in the second group; and 25 and 22½-ton machines in the third group.

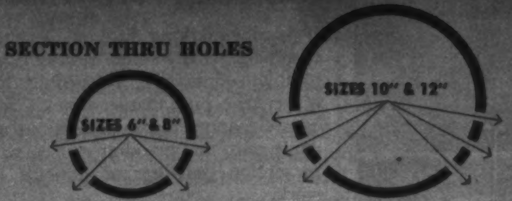
Improvements are said to include full vision cab, controls with underfloor mounting, more accessible machinery housing, heavier frame, larger segment type clutches and brakes, and a bolted-on cast counterweight.

With the exception of carriers, engines, counterweights, and variations in application of single or tandem hook rollers, all models have the same upper machinery as used in the highest rated capacity machine found in the particular group.

Carriers can be provided with either 6x4 or 6x6 drive. Heavy-duty frames, axles and transmissions are featured. Optional carrier equipment is available including power steering, remote control, optional engines, tires, fenders, and outriggers. Quick-Way Truck Shovel Co., Denver, Colo.

(*New Products continued p. 154*)





SECTION THRU HOLES

The minimum crushing strengths* of Transite Underdrain Pipe for subsurface drainage systems are shown in the following table:

PIPE SIZE (inches)	TOTAL APPLIED LOAD PER LINEAL FT. (pounds)	PIPE LENGTH (feet)
6	1,000	10
8	1,000	10
10	1,100	13
12	1,200	13

*A.S.T.M. 3-edge bearing method
A complete line of fittings is available including elbows, tees, wyes, crosses, end caps and increasers.

NEW!

for subsurface drainage...

TRANSITE UNDERDRAIN PIPE

- **Extremely good weight-strength ratio**
- **Naturally smooth interior**
- **Resists corrosion**
- **Assures low frictional resistance to flow**
- **Excellent alignment, tight joints, low material cost for new installation economies**

For highways, airports, dams, industrial plant sites—anywhere there's a subsurface drainage job to be done—Johns-Manville Transite® Underdrain Pipe does it effectively and economically.

The plastic coupling used with Transite Underdrain Pipe assures a permanently tight, *flexible* joint . . . keeps out waterborne silt and maintains permanent pipe alignment. And, because of Transite's long (10 ft. and 13 ft.) lengths, fewer joints are needed in the line.

Made of tough, durable asbestos and cement, Transite Underdrain Pipe won't rust. Its interior is made smooth to stay smooth, assisting the flow of water and reducing the opportunity for solids to find a resting place in the line. As a result, the perforations are able to perform their function of permitting entry of ground water into the line , at a maximum rate, where it can be quickly carried off.

Transite's low material cost, installation and maintenance economies mean important savings from the time it is specified until there is no longer a need for the line. Let us send you, without obligation, our book TR-246A. Write Johns-Manville, Box 14 (EN-6), New York 16, N. Y.

JM

JOHNS-MANVILLE

CIRCLE 153 ON READER SERVICE CARD

3.*
DAYLIGHTING DO's and DON'Ts
FOR SAFETY-CONSCIOUS ENGINEERS

* No. 3 of a series to help Engineers increase plant efficiency and economy.

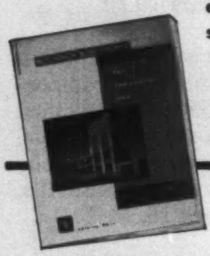
DON'T expect fire and breakage protection from ordinary window glass.

Only glass containing wire mesh qualifies as a fire retardant and enjoys recognition in most state and municipal codes as a safety factor in glazing openings in windows, skylights, partitions, exit doors and other vital areas in buildings.

DO EXPECT MAXIMUM SAFETY and PROTECTION FROM MISSISSIPPI WIRE GLASS . . .

the glass that helps "bottle up" fire . . . the original solid wire glass that is today the standard by which all others are judged.

Available in obscure patterns and polished for clear vision wherever quality glass is sold.



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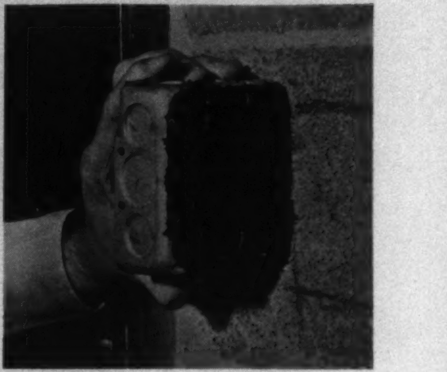


Goo Replaces Screw for Installing Juncture Box

With this epoxy adhesive, an electrician can install a junction box on tile, masonry walls or ceilings in about two minutes rather than spending 15 minutes doing the job with screws.

Coating with the adhesive, the junction box will remain on the wall without sliding after it has been held in place for only five seconds. The material, called Permacel Junction Box Mount is packed in a divided package; one side holds the epoxy resin and the other side the hardener. Before use the divider is simply removed and the material is mixed. About 8 ounces of material is enclosed in the special divided cup package, enough to mount 8 to 10 junction boxes, each 4x4 in.

After it has been mixed, the resin remains usable for about 30 minutes. Curing time at 70 deg. F. is 3 to 4 hours. PERMACEL DIVISION, JOHNSON & JOHNSON CO, NEW BRUNSWICK, N. J.

Pipe-Marking Device Cuts Costs, Saves Time

A pipe-marking tool is designed to eliminate costly and time-consuming template drawings. According to the maker, the pipe marker quickly and accurately draws direct projections at any angle onto any working surface without projection drawings or difficult layout work.

The device scribes ellipses ranging from 2½ in. to 3 in. minimum diameter to a 12 in. to 16 in. maximum diameter (depending on angle desired). Lateral and header markings for angles from 0 to 45 deg can be made, the manufacturer says.

For marking metal surfaces, the pipe marker is equipped with a soap-stone tip. This tip can be replaced with a ¼-in. pencil for marking plastic, paper or other nonmetal materials. SURY PRODUCTS CO., 3885 E. 78TH ST., CLEVELAND 5, OHIO.

DEMONSTRATIONS PROVE CURTISS-WRIGHT SUPERIORITY

CW-226—26 CU. YDS. STRUCK

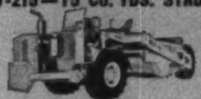
CWD-221—35 TON CAPACITY

CW-220—20 CU. YDS. STRUCK

CWD-214—25
TON CAPACITY

CW-215—15 CU. YDS. STRUCK

CWD-321—35 TON CAPACITY


CW-28—8.2 CU. YDS. STRUCK

CWT-30—30 CU. YDS. STRUCK

CW-320—20 CU. YDS. STRUCK

CWT-8—8 CU. YDS. STRUCK

Greater Bowl Factors— Faster Cycles Give Top Profit Per Equipment Dollar

You know that the machine that moves the most dirt makes you the most money—but, how do you select that machine? By past experience? No, because constantly changing models, techniques and contract conditions make this method impractical . . . By appearances? No again! You wouldn't bid a job on surface appearances alone, so why risk your profits by buying a scraper by the same method.

This leaves only one practical solution to the problem of buying a scraper. That is actual performance evaluation in the field, with a decision based on load weights, bowl factors, cycle times and the many other points that add up to high production. As one contractor says: "We considered three other major makes of scrapers for the job, but comparison and field demonstrations proved Curtiss-Wright the best machine. We feel that the added production and high bowl factors will save several cents per yard for any contractor, as it has for us."

Savings such as this are the result of buying by proven performance. See these results for yourself with a Curtiss-Wright demonstration on your job.

A C-W MODEL FOR EVERY APPLICATION

Five self-propelled scrapers with capacities from 8 to 26 cu. yds. struck, up to 36 cu. yds. heaped . . . Three interchangeable rear dumpers with 25 and 35 ton capacities . . . Six tractor-drawn scrapers with capacities from 8 to 30 cu. yds. struck, up to 39 cu. yds. heaped . . . A total of 14 high-performance machines covering the complete range of practical earthmoving applications.

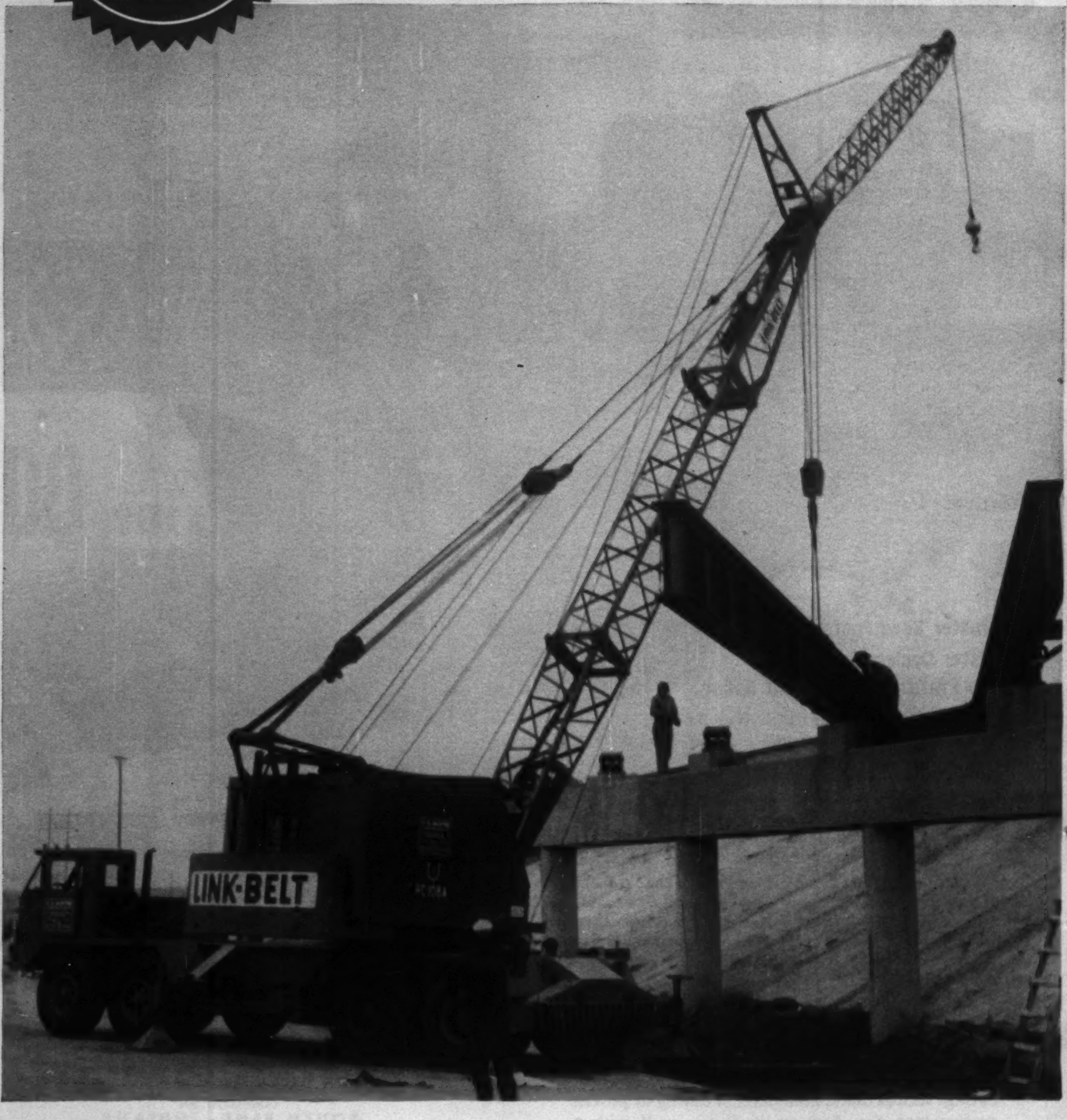
A

SOUTH BEND DIVISION
CURTISS-WRIGHT
CORPORATION
SOUTH BEND, INDIANA
Distributed in Canada by Canadian Curtiss-Wright Ltd.

For the security of men and machines a LINK-BELT SPEEDER is

SAFETY RATED

safety rated



from base to boom

Any accident can be serious . . . oftentimes triggering a costly chain reaction affecting income, equipment, spoilage, schedules, overhead and job profits!

Construction currently ranks as the fifth most hazardous industry. And that's why Link-Belt Speeder engineering gives a top-priority rating to safety in a conscientious effort to eliminate the mechanical causes of accidents . . . to widen the margin of protection for both men and machines.

Today's contractor shows a growing regard for the safety factor in the purchase of new equipment. He knows that "programmed safety" can mean lower insurance rates and premium rebates, often accounting for extra thousands of dollars a year . . . enough to affect the success of his bidding practices.

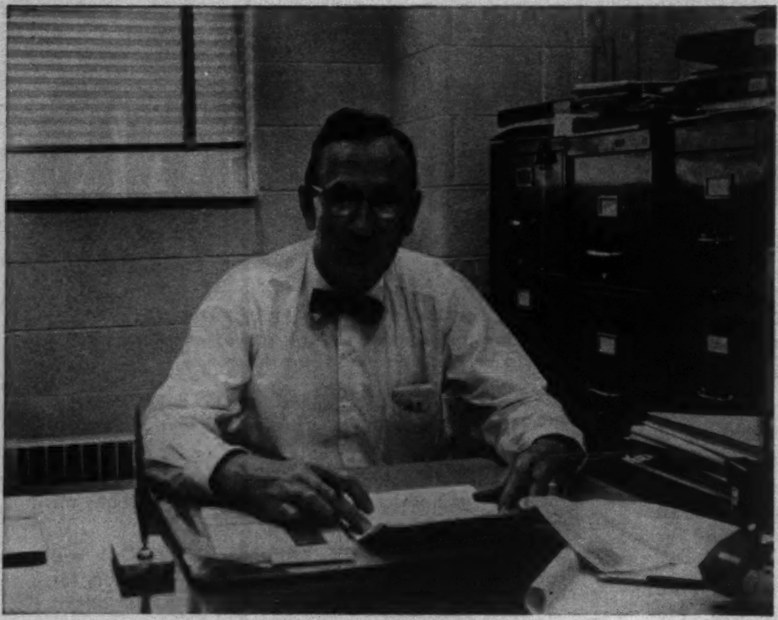
Many of these same contractors are already enjoying the maximum security offered in the following list of "Safety-Rated" features. See your distributor for more details or write LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. 107-60N

Link-Belt Speeder features...
for that extra-wide margin of protection for men and machines on the move!

- **SPEED-O-MATIC, THE TRUE POWER-HYDRAULIC CONTROL,** keeps operators alert all day by sharply reducing the fatigue factor.
- **POWER LOAD LOWERING (reversing) CLUTCHES** for either or both operating drums. Independently operated for safe load lowering.
- **INDEPENDENT POWER RAISING OF BOOM** with controlled lowering against engine compression (or, for extra precision, a lowering clutch for power down).
- **POWER-HYDRAULIC SWING BRAKE** holds machine at any radial position . . . easily set for slight drag where needed.
- **POWER-HYDRAULIC STEERING** with foolproof travel mechanism . . . no chance for "free wheeling."
- **ELEVATED OPERATOR'S CAB** for all-around visibility . . . ups production and safety.
- **ELECTRIC REMOTE CONTROL** for truck-cranes. Operator positions machine on the job without leaving his seat.
- **HYDRAULICALLY CONTROLLED OUTRIGGER JACKS** and beams eliminate manual setting . . . encourage operators not to take unnecessary chances on marginal lifts.
- **OUTRIGGER PONTOONS** are light-weight to assure frequent use . . . can't slip off jack.
- **YEARS-AHEAD "HI-LITE" CRANE BOOM** virtually ends hazardous whip or sway in long boom operations.
- **BOOMHOIST LEVER KICKOUT DEVICE** makes it impossible to boom beyond the danger point during close-radius operations.
- **DRUM ROTATION INDICATOR** tells operator how far load is being raised or lowered during "blind" loading or erection operations.
- **BOOM ANGLE INDICATOR** for safety double-check.

LINK-BELT SPEEDER
21 crawlers
6 truck-cranes
4 self-propelled

It's time to compare . . . with Link-Belt Speeder



Emmett H. Karrer, engineer-turned-professor, makes . . .

Your Education His Business

Prof. Emmett H. Karrer pulls top construction managers to his Ohio State classroom for courses tailored to their needs—and at their request.

"Education is a continuing process," he says. "And a great state university has an obligation to make this type of education available to citizens of the state." He's remarkably successful at putting these words to practice.

Courses for contractors he has staged include a basic course for field supervisors, specialized courses in earthwork and bridge construction and a management course for owners and general managers.

No theoretician in an ivory tower, this engineer-turned-professor has other practical activities that include:

- Leadership in spreading American highway know-how abroad, principally through training foreign students who come to the Columbus campus from all over the free world.
- Contact with an active and growing research program at OSU through the Highway Research Council of Ohio. The Council—formed last fall—is a six-man advisory and coordinating group involving the university's college of engineering, its engineering experiment station, and the Ohio Department of Highways.
- Direction and teaching of a five-year program of undergraduate study in highway engineering (as a branch of civil engineering) plus graduate courses in the same subject.

• **His construction students**—Professor Karrer's management courses are run with cooperation of the Ohio Contractors Association. Ideas for the courses have come from the professor's experience during three summers (1957-59), when he served as consultant to the contractor group.

In 1958, he made arrangements to give the first basic course for supervisors: supervision and its responsibilities; use of plans and specifications; construction surveying; moisture and compaction of soils; flexible and rigid pavement construction; management of construction equipment; safety; labor regulations; and employee and human relationships.

His basic course now has been given five times.

In addition, he gave a specialized course last year to supervisors of bridge construction and another to supervisors of earthwork construction.

This year, at the request of the contractors themselves, Emmett Karrer put on a course for top contractor management. Enrollment was limited to owners and general managers; more than 30 completed the course.

Instruction centered on management of men, machinery and money.

Greatest "student" interest, says the professor, was in human factors, including personality development and the understanding of employee motivations and behavior. Financial management was a close second.

The coming year may see further expansion of the short course program, since Professor Karrer is scheduled to spend the summer as a consultant to the Ohio Department of Highways. He hints that a series of short courses for highway department employees might well come out of this. Education beyond the college level is a byword with him. "The ceremony marking the end of formal schooling is called commencement, not finishment," he says.

• **His foreign students**—Professor Karrer's work with the International Road Federation dates back to 1951. That year, he made a 19-country tour of Latin America to determine educational needs in highway engineering.

His recommendations lead directly to expansion of the IRF scholarship program originally established in 1949.

Since 1949, 215 students from 60 countries have participated in IRF's program and many have studied at Ohio State. (Purdue, Illinois, Northwestern and MIT also are participating.)

Professor Karrer says the program has been highly successful, both as to technical training and in promoting better relations between the U. S. and countries abroad. Many of his IRF students have gone on to fill key posts in highway administration and engineering in their native countries.

Since his initial trip to Latin America, Professor Karrer visited Mexico in 1954 to assist the National University of Mexico and the University of Pueblo in establishing curricula in highway engineering. In 1956 he again visited Latin America to check on progress and problems of highway engineering education. He has presented papers at two World Highway Meetings—in 1955 in Rome and in 1958 in Mexico City.

• **His research projects**—On the research side, Professor Karrer is predominantly an advisor and coordinator. Engineering research at OSU is done in the Engineering Experiment Station, in cooperation with the teaching departments; Robert F. Baker, Jr., is Director of Civil Engineering Research.

Still feeling its way is the Highway Research Council, designed for close cooperation between the university and the State Highway Department. Emmett Karrer has high hopes for it.

(*Continued p.* 163)

MUELLER CO. introduces the

ORISEAL® VALVE

Now! a new valve . . . the ideal curb valve

SURPRISINGLY EASY TO OPERATE—EVEN AFTER PROLONGED IDLENESS!

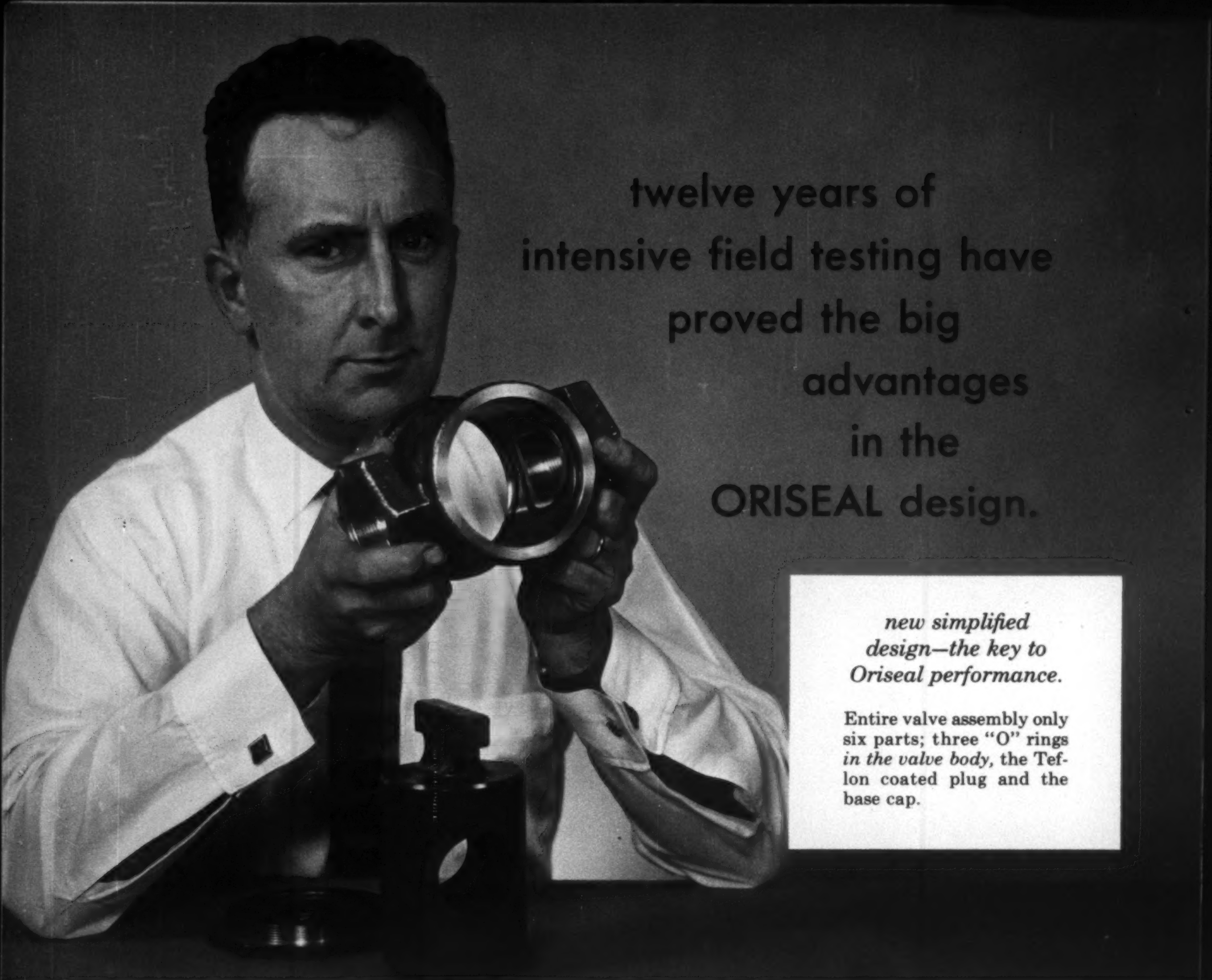
POSITIVE LIFE-TIME PRESSURE SEALING!

EXTREMELY LONG CYCLE LIFE!

PERMANENTLY "LUBRICATED" WITHOUT GREASE!

the key to its performance is in the design . . .

MUELLER CO., DECATUR, ILL.



twelve years of intensive field testing have proved the big advantages in the ORISEAL design.

new simplified design—the key to Oriseal performance.

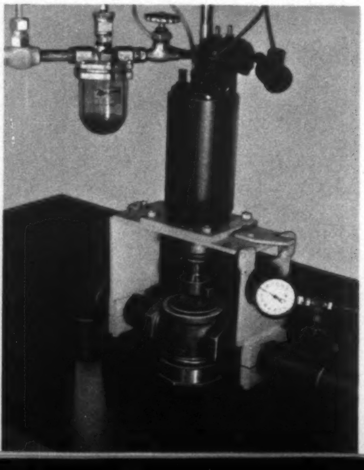
Entire valve assembly only six parts; three "O" rings *in the valve body,* the Teflon coated plug and the base cap.

field and laboratory tests—the key to Oriseal's proof of performance!

Long cycle life! Tests prove the extremely long operating life of the Oriseal. Valves of all sizes installed on water and air lines operated from 25,000 to 45,000 cycles without developing leaks or without an increase in the torque required to turn them.

Easy turning! Tests prove the 2″ Oriseal Valve is easily operated under 125 p.s.i. with a 12 inch wrench. This has been proven in all test conditions — after long periods of remaining open or after repeated opening and closing.

Positive sealing! The Oriseal has proven to be leak proof. ¾″ Oriseal Curb Valves installed in 1948 have shown no leaks to date. All Oriseal Curb Valves removed from service lines and tested with air at 85 p.s.i. showed no leaks.

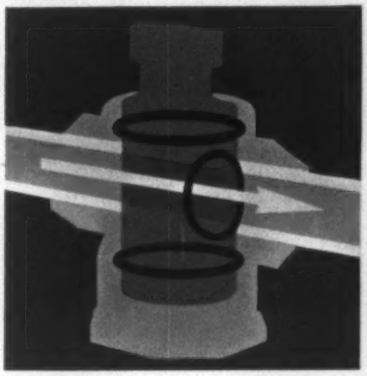


Permanently "lubricated"! Tests prove the straight Teflon coated plug actually loses none of its "lubricating" or friction resistant qualities through years of continued operation. Teflon impregnates the plug surface and "lubricates" effectively even after years of wear.

No operating maintenance! All Oriseal Valves tested required no periodic maintenance. Some Oriseal Curb Valves were cycle tested under pressure as much as 45,000 times without service attention of any kind.

If you would like the complete test reports on the Oriseal Valve,
please write to Mueller Co.,
Decatur, Illinois.

Oriseal design features add new benefits to the "plug valve"

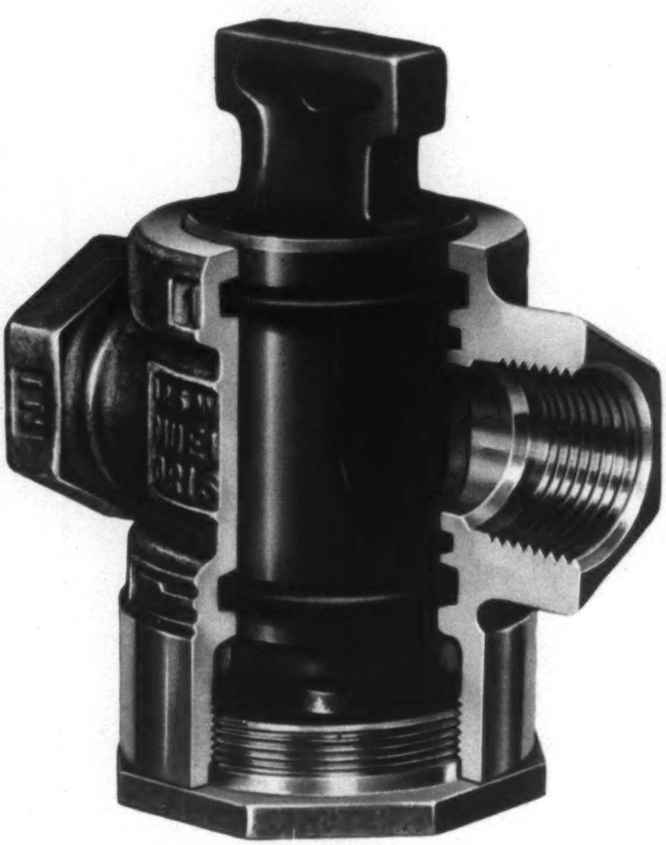


The Oriseal maintains the advantages of a plug type valve, yet is easy to operate, does not require lubrication or periodic maintenance and needs no mechanical means of seating.

The Oriseal is a sturdy quarter turn valve. The position of the tee head readily indicates whether the valve is open or closed. Even though the valve is hidden or otherwise inaccessible, the open or closed position is always easily determined.

There are no small parts to twist or break — no stem to bend — no threads to strip.

Check these Oriseal design features ... they offer curb stop advantages not found in any other type valve.



FULL ROUND WAY—permits rodding and pipe cleaning operations.

STRAIGHT THROUGH FLOW—no obstructions—almost no pressure loss.

PROTECTED SEATS—in open position seating surfaces are covered and protected from the flow of the fluid.

TOP AND BOTTOM "O" RINGS—positive pressure sealing without mechanical means—tend to cushion the plug.

STRAIGHT, BALANCED PRESSURE PLUG—top and bottom "O" rings are of equal size eliminating end thrust—contributes to ease in turning.

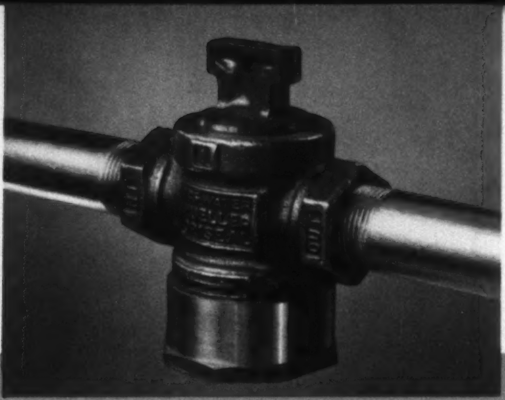
PORT "O" RING—functions in a specially designed "O" ring groove located in the body around the outlet port. This design provides the maximum support for the "O" ring—eliminates major causes of "O" ring damage—results in the proper "O" ring seating action—gives positive pressure sealing and long cycle life.

TEFLON COATED PLUG—surface of the plug is coated and impregnated with Teflon, which is an inert material with a very slick surface. Teflon assures easy turning—eliminates "sticking" or "freezing" even after prolonged idleness.

STRONG CAST BRASS BODY—designed with extra strength and sturdy check lugs to withstand all normal operating and installation stresses. The ORISEAL body has withstood extreme laboratory stress and pipe bending tests, as well as field test conditions.

NO LUBRICATION OR PERIODIC MAINTENANCE—if necessary, the valve can be completely reconditioned in the line. Simply remove the base cap—slide out the plug—replace the "O" rings—and reassemble the plug and base cap.

MUELLER CO., DECATUR, ILLINOIS



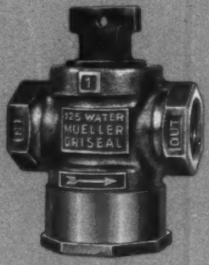
ORISEAL CURB VALVE *Specifications*

Full Round Way Opening — unobstructed passageway
Solid Tee Head — ¼" hole for attaching stationary rod
Quarter Turn with Check
Opening by turning to the left (counter-clockwise)
125 p. s. i. Water Working Pressure
125 p. s. i. Test Pressure — Every Oriseal Valve is fully tested in both the open and closed position with 125 p. s. i. air pressure under water. This is a much more exacting test than a hydrostatic test.

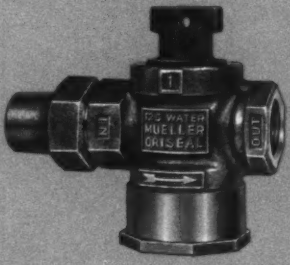
150° F. Maximum Water Temperature Rating
Sizes — ¾", 1", 1¼", 1½," 2"

Oriseal Valves comply with all applicable parts of the following specifications:

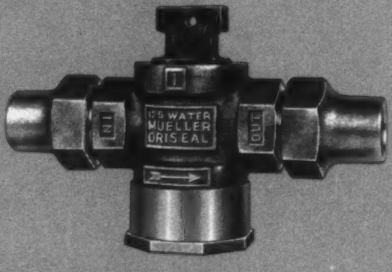
AWWA	C800-55
ASTM	B-62-52 (85-5-5-5)
ASA	B16.15-58
ASA	B2. 1 - 45



H-10291: Oriseal Curb Valve
Inlet: Inside I.P. Thread
Outlet: Inside I.P. Thread



H-15176: Oriseal Curb Valve
Inlet: Mueller Copper Service Pipe Connection
Outlet: Inside I.P. Thread



H-15201: Oriseal Curb Valve
Inlet: Mueller Copper Service Pipe Connection
Outlet: Mueller Copper Service Pipe Connection

Mueller Improved Curb Boxes with either stationary or separate shut-off rods are available: H-10385—¾", 1" valves; H-10386—1¼", 1½", 2" valves

a word about Teflon

Teflon is a chemically inert neutral substance with no toxicity or taste.

It has been approved for use in food processing and food handling. Teflon is one of the most chemically and corrosive resistant materials known.

If you have experienced curb stops "sticking" or if you are using gate valves in place of large size curb stops, test an Oriseal Curb Stop and be assured of its easy turning qualities. Write today or see your Mueller representative.

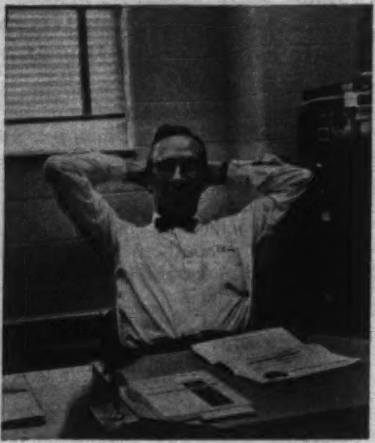
MUELLER CO. since 1857 QUALITY SERVING the Water and Gas Industries

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

Form No. 9010

Printed in U.S.A.



THE GRADUATION CEREMONY is called "commencement, not finishment."

• **His regular students**—Every undergraduate engineering student at Ohio State takes a five-year curriculum. After two years of pre-engineering and an entrance examination, the student enters the professional division of his choice covering the final three years.

Within civil engineering, the options are: structural engineering; soil mechanics and foundations; sanitary engineering; and Emmett Karrer's highway and transportation engineering.

This year, there are 36 students engaged in work beyond the bachelor's level in civil engineering, most working toward a master's degree. About half are majors in transportation, with emphasis on highways and airports.

With these students, undergraduates and graduates alike, Professor Karrer's personal touch is reflected in his courses by their emphasis on practicality and his ability to bring to the students the latest developments in his field.

Emmett Karrer, a vigorous man in his early fifties, spent 16 years with the Bureau of Public Roads before returning to OSU, his alma mater, in 1946.

As bridge engineer for five years in BPR's Division II, he was responsible for administrative review of the planning, design, construction and maintenence of bridges in Ohio, Pennsylvania, Virginia, West Virginia, Delaware, Maryland and the District of Columbia.

Always active in professional affairs, Professor Karrer is a past chairman of the executive committee of the Highway Division of the American Society of Civil Engineers. He is now president of the Educational Division of the American Road Builders Association.

The vigor of Emmett Karrer and a handful of other highway educators scattered over the country has revitalized ARBA's educational division, which was long a small group to which ARBA big wigs had given only token support. Faced with an ultimatum to disband or support the division, ARBA came through with the funds that inspired the educators to fresh attacks on the problems of roadbuilder education.

• **His career**—Emmett Karrer says their next move will be a comprehensive survey of undergraduate curricula in highway engineering, from two points of view: (1) what is being done and what should be done, as seen by the educators; and (2) what the industry wants, as expressed by the state highway departments, the contractors, and other "users" of highway engineering graduates. The study will be directed by Fred J. Benson, dean of engineering at Texas A&M.

Professor Karrer is also a member of the joint committee of the American Society for Engineering Education and the Associated General Contractors, which concerns itself with the whole field of construction education.

Modjeski & Masters Admits New Partners

Two men have been admitted to full partnership in the consulting firm of Modjeski & Masters, Harrisburg, Pa., and two others have been elevated to associate status. All have been associated with the firm previously, so the changes are essentially promotions.

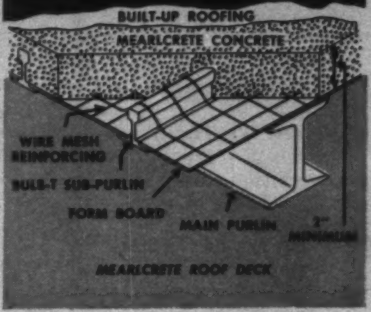
The two new partners are T. Robert Kealey and Robert D. Hutton. Mr. Kealey has been with the firm for about 13 years in responsible capacities as a designer and field engineer. Mr. Hutton, with the firm for 12 years, has worked in various positions in both the Harrisburg and New Orleans offices. Both men will be located in Harrisburg.

The new associates are Frank D. Sears and Gerald K. Gillan. Mr. Sears, with 11 years of experience with the firm, has been in charge of the New Orleans design office for the past three years and will continue in that position. Professor Gillan comes to Modjeski & Masters from the civil engineering department of Pennsylvania State University, but has been employed in a consulting capacity by the firm on numerous occasions over the past several years.

Modjeski & Masters is one of the oldest bridge engineering firms in the country. It is also active in the fields of expressways, wharves, subways and foundations. It was founded by Ralph Modjeski in 1893. Frank Masters, the present senior partner, joined it in 1904.

(*Men and Jobs Continued p. 164*)

MEARLCRETE
insulating
ROOF DECKS



fast

Place up to 30,000 square feet of roof deck or insulation in a single day.

lightweight

Permits savings on structural steel frame!

economical

Competitive with all other systems!

Pumped into place as insulating fill on galvanized corrugated steel decks, or as roof decks on form boards, Mearlcrete Foam Concrete offers many advantages over other systems. Here are a few:

CONTROLLED QUALITY — Mearlcrete is installed only by franchised trained contractors.

INCOMBUSTIBLE — 100% concrete reduces heat flow and flame spread.

LOW WATER CONTENT — Less than other poured decks...dries rapidly... pemits faster construction schedules.

HIGH INSULATING VALUE — Reduces initial cost and operating cost of heating and cooling plant.

WRITE FOR TECHNICAL BULLETIN R411A
with complete data on Mearlcrete Foam Concrete and the name of your local Mearlcrete contractor.

MEARL chemical corporation
220 Westfield Ave. West, Roselle Park, N.J.
CHestnut 5-0500

New! Kinnear POWER OPERATOR

Adds more efficiency than ever to KINNEAR ROLLING DOORS

FINEST ROLLING DOOR OPERATOR EVER DESIGNED

FEATURES:

New "Removable" Design — doesn't disturb auxiliary hand-chain operator.

Any Mounting! Vertical or horizontal — on door or wall bracket, or through-the-wall!

Easy Installation. Simple in-the-field control-wiring to a terminal strip.

Reserve Power for smooth action regardless of wind pressure, drifted snow, collected grime, or extra years of usage.

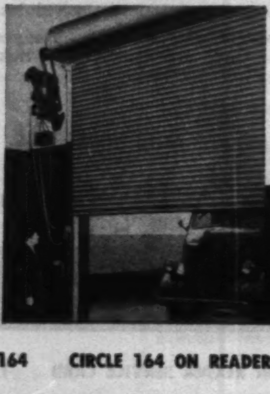
Thermal Protection Against Overload — motor cuts out before damage can occur.

New Worm Gearing for highest efficiency and longest service.

Centrifugal Clutch transmits motor action to door with no shock. Prevents motor stalls and overload damage.

Seven Sizes! Capacities for doors of any size!

MOUNTS ON DOOR
OR ON WALL....
(OR THROUGH THE WALL)



A new high in door efficiency is reached in Kinnear Rolling Doors equipped with the new Kinnear "Series Three" Power Operator. This is an *all-new* concept in motorization for rolling doors — designed with a single goal in mind — to *reduce to minimum* all chance for troubles from overload, torque shock, constant start-stop action—in a motor that assures easiest installation and maintenance, and permits any type of mounting.

The "Series Three" Kinnear Power Operator, like the Kinnear Rolling Door itself, is the finest achievement today's engineering skills can produce.

Write for new Power Operator Bulletin

The KINNEAR Mfg. Co.
FACTORIES: 1820-40 Fields Avenue, Columbus, Ohio
1742 Yosemite Avenue, San Francisco 24, Calif.
Offices and Agents in All Principal Cities

KINNEAR ROLLING DOORS
Saving Ways in Doorways

Pomeroy Picks Van Geem New Engineering Director

Earl T. Van Geem, assistant vice president, has been named director of engineering for J. H. Pomeroy & Co., Inc., international engineering and construction firm headquartered in San Francisco.

A civil engineering graduate from the University of Southern California, Mr. Van Geem joined Pomeroy in 1950 as a field engineer.

After moving through several engineering executive posts, he was named assistant vice president, foreign operations, in early 1958. He will continue to hold that position in addition to his new appointment.

Honors

The Medal of Honor for City Planning, established in 1939 and conferred on only three previous occasions, has been given to **Lawrence M. Orton**, a member of the New York City Planning Commission. The award is sponsored jointly by the New York Chapter of the American Society of Landscape Architects, the Brooklyn and New York Chapters of the American Institute of Architects and the Metropolitan Section of the American Society of Civil Engineers.

The Society of American Military Engineers announces the following annual awards:

The George W. Goethals Medal, for the most eminent and notable contribution in the field of engineering, to **John W. Sibert Jr.**, for his work in the construction of the Oahe Dam, Pierre, S. D.

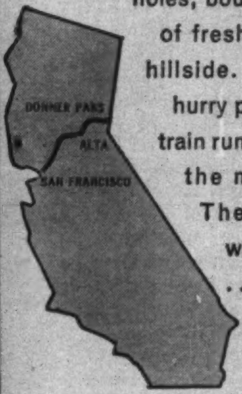
The Wheeler Medal, for the most outstanding contribution to military engineering by a member of the Corps of Engineers, U. S. Army, to **Col. Loren W. Olmstead**, for his work as district engineer on the St. Lawrence Seaway Project.

The Moreell Medal, for the most outstanding contribution to military engineering by a member of the Civil Engineer Corps, U. S. Navy, to **Cmdr. John G. Dillon**, for his improvement of techniques for operation and management of utilities in the shore establishment of the U. S. Navy.

The Newman Medal, for the most outstanding contribution to military engineering by a member of the Directorate of Civil Engineering, U. S. Air Force, to **Col. Clarence A. Eckert**, for establishing a professional development program for Air Force Civil Engineers.

A. B. Dow of Midland has been given the Michigan Society of Archi-

In the rugged mountain country of eastern California, U. S. Highway 40 twists and curves past the little towns of Colfax, Alta, Baxter and Emigrant Gap on its way east to Donner Pass. Tall pines, mud holes, boulders and patches of fresh snow cover the hillside. Cars and trucks hurry past; a long freight train rumbles by further up the mountain slope. Then . . . a cold wet wind stirs the trees . . the earth grunts, shifts . . . and . . . ROCK SLIDE!!!



Giant mud slide blocks U.S. 40. Traffic stopped 'til Michigan goes to work

4-yd Tractor Shovel clears huge boulders

Early last winter, 100,000 cubic yards of mud, rock and earth tore away from a mountain-top near Alta, Calif. The muddy wave toppled trees and sucked up boulders—picked up speed as it tumbled down to Highway 40—dumping its load across the road shoulders and pavement.

To put ruffled nature back in place, the State of California, Division of Highways, called for bids. J. O. Archibald Company, general contractor from Redwood City, was awarded the job.

Archibald rushed his normal earthmoving fleet of scrapers, tractors, shovels and trucks to clear the highway, and to stabilize the hillside by terracing. But as they cleared away mud and rock, volcanic ash and sandstone, work crews came across giant boulders that required special treatment. Archibald didn't want to blast any more rock than necessary. Blasting would add to the cost of the project. Hoses and compressors would slow earth-moving. And any more vibration might set off another slide!

Special rock, special tool

So Archibald scanned his equipment roster, then selected a Tractor Shovel that in four passes was loading out 18 and 20 yard haul trucks. His machine—a Michigan Model 275A—swung a big bucket, all right. Four yards. But big enough to handle the big rock? Say a boulder 10 feet in diameter?

It became Operator F. E. "Mac" McKinsey's job to find out. Mac had put in lots of time on Archibald's 2¾-yd Michigans—also had clocked almost 200 hours on the new 4-yd Model 275A. But that was more-or-less straight truck-loading work. What could the 275A do halfway up a mountainside, working in treacherous, muddy footing, on steep slopes, moving boulders as required to a gully half a mile away.

Carries 8 tons, dozes 10

Under these conditions, the Michigan went to work. First, the operator edged Michigan's bucket lip under a typical giant boulder. Then, careful work of the hydraulic controls gently raised and tipped the bucket as operator felt his way under the huge rock. If the boulder could be lifted, more than likely it could be carried. And it was, load kept low—just off the ground.

So the job continued, the Michigan by itself moving a stream of 8 to 10 ton boulders to the dump area. Even when a rock was too big to see over, Michigan carried it . . . the operator simply driving in reverse. Power steer and identical speeds forward and reverse made this easy. Other times, when boulders weighed over 10 or 11 tons, or when one was so odd-shaped it couldn't be carried in the bucket, the 262 hp Michigan simply *dozed* it the half mile to the edge of the gully.

Could the ability to handle 4 yds—lift up to 11 tons per pass—help solve *your* production problems? To help you judge for yourself, we'll be glad to show you a Model 275A in action. Call to arrange time and place.

Powerful Michigan works bucket under 10-ton boulder, lifts, and away goes the huge load.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY

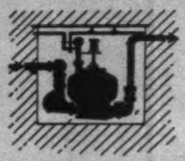
CLARK EQUIPMENT

Construction Machinery Division
2401 Pipestone Road
Benton Harbor 20, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

CIRCLE 165 ON READER SERVICE CARD

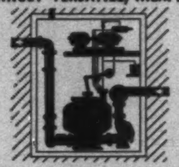
Which sewage lift station is best for your job?

TOPS IN DEPENDABILITY AND SAFETY



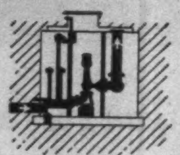
Concrete or steel underground station with Shone® Type S pneumatic ejector, mechanically controlled (warranted 25 years). Remote air supply. Nothing electrical; maintenance free, operates even under water. For municipalities and large subdivisions.

SURPRISINGLY VERSATILE, INEXPENSIVE



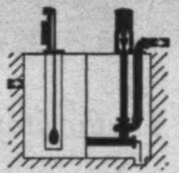
Shone® Type SAC station, underground in concrete vault. Mechanically controlled ejector (warranted 25 years) has its own compressor. Frequently less costly than package stations. Finds use everywhere.

PACKAGE STATION



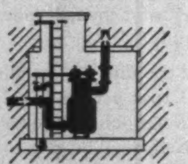
Quality underground station with vertical, short-coupled (Series 6260), dry pit centrifugal pumps. Quality design and equipment give good service life at nominal cost. For small permanent stations, growing areas.

LOW FIRST COST—EASY INSTALLATION



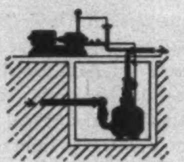
Two-compartment steel basin with centrifugal vertical wet pit pump. Pumps are not submerged; motors protected from flooding. Low first cost; fast installation. For buildings, small growing subdivisions.

ULTIMATE IN PACKAGE DESIGN



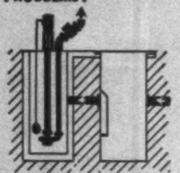
Package underground station with Expelsor® pneumatic ejector, electrode controlled. Sanitary and dependable, low maintenance, easy to service. Recommended for municipal and subdivision applications.

BUILDING TYPE STATION



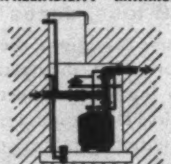
Expelsor® pneumatic ejector station designed for use in buildings. Compressor is on basement floor; ejector on floor below. Sealed installation gives safe, odorless handling of sewage indoors.

SPECIAL PROBLEMS?



Centrifugal vertical wet pit pumps with adjoining settling basin. Good for areas where sand or old sewers create problems. Special pump construction for abrasive or corrosive conditions, industrial wastes.

MAXIMUM RELIABILITY—MINIMUM SPACE



Package underground station. Expelsor® pneumatic ejector has two compartments, duplex compressors and controls. Excellent service accessibility. Especially suited for subdivision and municipal lift stations.

L-5911

The answer depends on the job. Is it to be a temporary station? What about future loads? How much maintenance will it get? What type of power is available? These and many other questions must be weighed carefully and without bias. In making the decision, why not put Yeomans 61 years' experience (59 on underground stations alone) to work? Because Yeomans builds the only complete line of sewage lift stations in the industry, recommendations are impartial and in your best interest. Phone, wire, or write now.

YEOMANS

1999-1 North Ruby Street,
Melrose Park, Illinois

SPECIALISTS IN SEWAGE LIFT STATIONS—THE COMPLETE LINE

CIRCLE 166 ON READER SERVICE CARD

tects Gold Medal for 1960 for his "creativeness and ability."

The Legion of Merit, second highest peacetime award for meritorious service, has been conferred upon **Col. Roland H. Cipolla,** Air Force Regional Civil Engineer for New England, for his service while in charge of $230 million of Air Force construction in New England.

Associations

R. D. Thomas, Jr., has been elected president of the American Welding Society. He is president of the Arcos Corp. in Philadelphia, and he has taught at Temple University and Drexel Institute of Technology in that city.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, made up of the old ASHAE and ASRE, has named **Walter A. Grant,** vice president of Carrier Corp., to its presidency.

Operating under its new constitution for the first time, the membership of the Mechanical Contractors Association of America, Inc., automatically elevated to its presidency its senior vice president, **Joseph S. Kearny,** president of the Northwestern Heating & Plumbing Co., Evanston, Ill. **Frank V. McBride** of the Frank A. McBride Co., Paterson, N. J., was elected new senior vice president.

Victor E. Hall, consulting engineer, has been installed as president of the New York Society of Professional Engineers.

Roderick J. Maynes of Rutland has been elected president of the Vermont Society of Engineers. He is treasurer of Earle & Merry Inc., Engineers & Contractors.

The Consulting Engineers Association of Oregon has installed **Harry Czyzewski,** manager of Metallurgical Engineers Inc., Portland, as its new president.

William H. Ford, of J. R. Ford Co., Inc., has been named president of the Virginia Asphalt Association, Inc.

S. James Campbell, treasurer of Harry T. Campbell Sons' Corp., Baltimore, has been reelected president of Associated Builders and Contractors, Inc., a regional organization.

Retirements

Cushing Phillips, president of the Los Angeles Board of Public Works, has announced his retirement. He has been elected president of the board annually since his first appointment in 1953. Prior to coming to Los Angeles, he spent 34 years in the U. S. Navy, retiring with the rank of Rear Admiral.

Michigan Dozer: *replaces 2 crawlers on fill*

Michigan Pusher: *eliminates crawler track costs*

Michigan Scraper: *delivers more loads per shift*

Production up 16%—profit up too

On Interstate work near Orlando, Florida, an enterprising contractor has boosted normal production ⅙ or more—cut his man-hour requirements—and upped profits.

The firm is L. A. Reynolds Co, Winston-Salem, N.C. Their job: an 850,000 yd double figure-eight interchange. Their key machines: three high-speed Michigans—a 262 hp Model 280 Tractor Dozer, a 375 hp Model 380 Tractor Dozer, and a 19-yd Model 210 Tractor Scraper.

Pusher loads alternately forward and reverse

The Model 380 Dozer accounted for much of the saving. Utilizing both front and rear push-blocks, it loaded scrapers in alternating directions, thus eliminated the wasted time of turns and backup. Rig serviced four scrapers with time to spare . . . regularly loaded and boosted each scraper out of the cut in under 1 minute. Load size in the sandy material ranged from 14 to 16 pay yards.

Dozer spreads 7,200 yds

Similar speed advantages were reported on the fill. Here, Reynolds' 56,000 lb Michigan Model 280 Dozer replaced *two* 50,000 lb class crawlers. It had no trouble keeping up with the four scrapers—spreading up to 7,200 pay yards per day along a ¼ mile long, 108 ft wide right-of-way.

More dirt, fewer dozers add up to more profit

But most important, perhaps, was the continuous profit story. Operator load-counts showed an average of five extra loads per 10-hour day for the power-shift, torque converter Michigan Scraper. Cross-section computations, Michigan Model 380 vs the 320 hp crawler-pusher formerly used, showed an extra pay yard per load for all scrapers. *In addition, with rubber-tired machines replacing crawlers, there were no track repairs.* And, more money was saved in operating costs, two dozers vs three.

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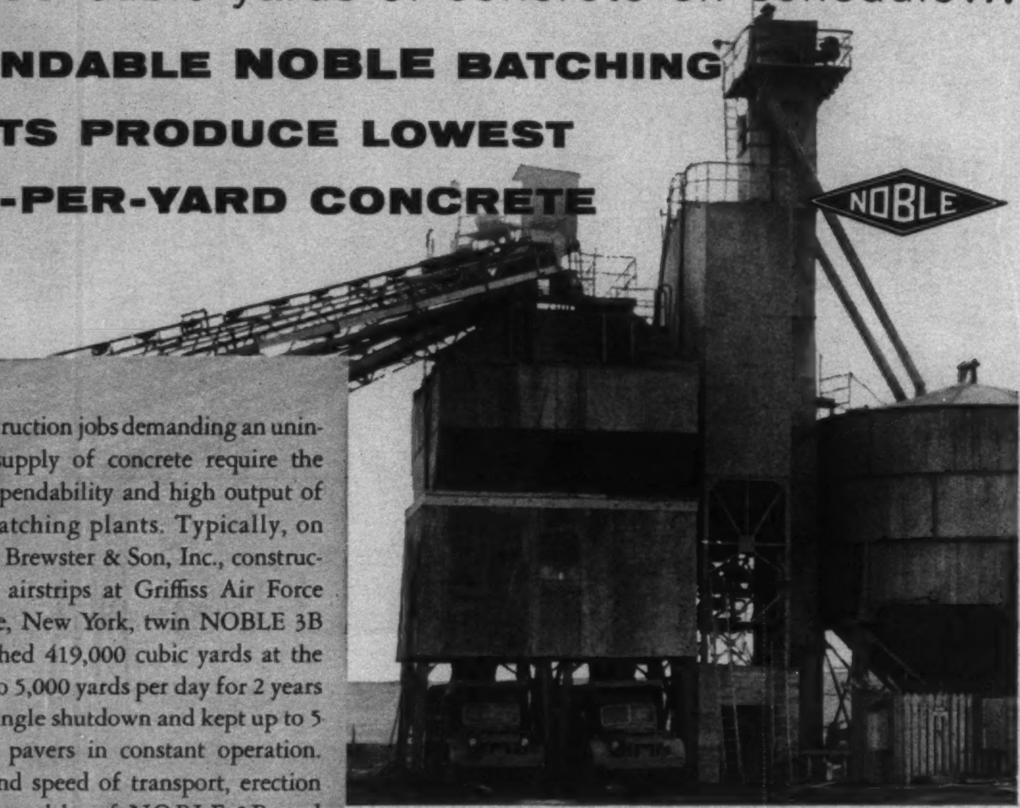

Large construction jobs demanding an uninterrupted supply of concrete require the extreme dependability and high output of NOBLE batching plants. Typically, on George M. Brewster & Son, Inc., construction of jet airstrips at Griffiss Air Force Base, Rome, New York, twin NOBLE 3B plants batched 419,000 cubic yards at the rate of up to 5,000 yards per day for 2 years without a single shutdown and kept up to 5 dual drum pavers in constant operation. The ease and speed of transport, erection and disassembly of NOBLE 3B and NOBLE-MOBILE Central-Mix plants multiplied the savings for the Brewster company on its widespread operations.

The twin NOBLE 3B plants (above) at Griffiss Air Force Base discharge a total of six 1.37 cubic yard dry batches every 1 minute and 18 seconds. Each plant has 3 batchers only, 1 for cement and 2 for aggregates, which accurately weigh materials simultaneously for a **single** batch. Two trucks are loaded simultaneously. Installation has two overhead batching silos for 1200 cubic feet of cement, ground storage silo for additional 4600 barrels of cement, 300 tons of overhead sand and aggregate storage.

NOBLE-MOBILE Central-Mix concrete plants produce 52,000 cubic yards for building construction at Griffiss Air Force Base; 36,000 cubic yards for highway paving at Spring Valley, New Jersey; 80,000 cubic yards for approaches to George Washington Bridge, New York, now being double-decked. Output is up to 125 cubic yards per hour. Bin stores 100 tons of aggregates in 3 compartments, 275 barrels of cement in separate compartment. Low profile reduces conveyor height to top of aggregate bin. 5 cubic yard dry batch holding hopper at end of batch transfer conveyor charges tilting mixer. Adaptable for dry batch production. Complete with wiring, air compressor and automatic controls, compact NOBLE-MOBILE is transported at minimum cost from job to job.

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A Man's Partnership With God

MOVER OF MEN AND MOUNTAINS—By R. G. LeTourneau. 282 pages. Prentice-Hall, Inc., New York, N. Y. $3.95.

This is the autobiography of R. G. LeTourneau, the self-educated genius who left school at 14 and went on to revolutionize the earthmoving industry by development of the self-propelled, rubber-tired scraper. On the contemporary scene, his far-flung company specializes in the development and manufacture of gigantic earthmoving, land-clearing, compaction, drilling and many other types of rigs—machines electrically powered, often with electric wheels.

It is, too, the story of one man's unique partnership with God. For R. G. LeTourneau is one of the world's outstanding Christian laymen. At the height of his fortune, he set up the LeTourneau Foundation "to sponsor Christian, missionary, and educational work for the greater glory of God." He presently turns over 90% of his company's profits to the foundation, which runs a school in Texas. The foundation also sponsors vast projects in Liberia and Peru.

His basic theme and perhaps the basic message of his book: It pays to be in partnership with God, because spiritual bankruptcy is far more serious than financial loss could evet be.

Estimating Mechanical Work

PLUMBING, HEATING AND PIPING ESTIMATORS' GUIDE.—By Paul G. Davis, 213 pages. McGraw-Hill Book Co., New York, Toronto, London. $6.50.

From his experience as a mechanical contractor, the author has developed and reported in this book a simple, easily understood, flexible estimating system. The systematic approach he advocates can help reduce mistakes. However, his method requires the estimator to exercise judgment.

An important element of this method is the early estimate of an efficiency factor to be applied to labor requirements. The author lists eight items that should be considered in evaluating this factor. These include the effect of the local economy, availability and training of labor, supervision, site conditions, weather and type of work.

The efficiency factor multiplied by man-hour requirements of a specific task gives the labor factor to be used in the estimate. The book contains more than 70 labor-factor tables.

The book also presents detailed bid summary sheets that establish a procedure for take-off of material. These cover the essentials of equipment and labor required for setting equipment. The book, in addition, explains how to determine the average hourly wage rate and discusses other useful estimating data, such as site work, drainage, piping and boiler plants.

New Edition on Steel Design

DESIGN OF MODERN STEEL STRUCTURES—Second Edition, by Linton E. Grinter. 491 pages. The Macmillan Co., New York, N.Y. $10.

The major change in the new edition of this textbook on steel design is elimination of a chapter on design of continuous beams based on the elastic theory. In its place, the author, now dean of the graduate school, University of Florida, has substituted a chapter on plastic design. This new chapter not only covers continuous beams but also ultimate-load analysis of bents and simple continuous frames.

The organization of the book is substantially the same as for the first edition. Connections are taken up initially. Then, before the author passes on to the design of steel members, he interposes a chapter on timber construction. His reasons: Timber design may not be treated in a separate course. Modern timber design involves considerable steel for connections.

Other chapters deal with tension, compression and flexural members. And still others discuss roofs for industrial buildings, a highway bridge truss, office buildings and design of a tall building.

Structural Theory Basics

STRUCTURAL MECHANICS—By Samuel T. Carpenter. 538 pages. John Wiley & Sons, Inc., New York, and London. $9.50.

This textbook on structural theory is intended primarily for undergraduate instruction. But many engineers will find it valuable for refresher purposes.

The book is distinguished by the emphasis the author places on the mathematical treatment of structural theory.

(Continued on p. 172)

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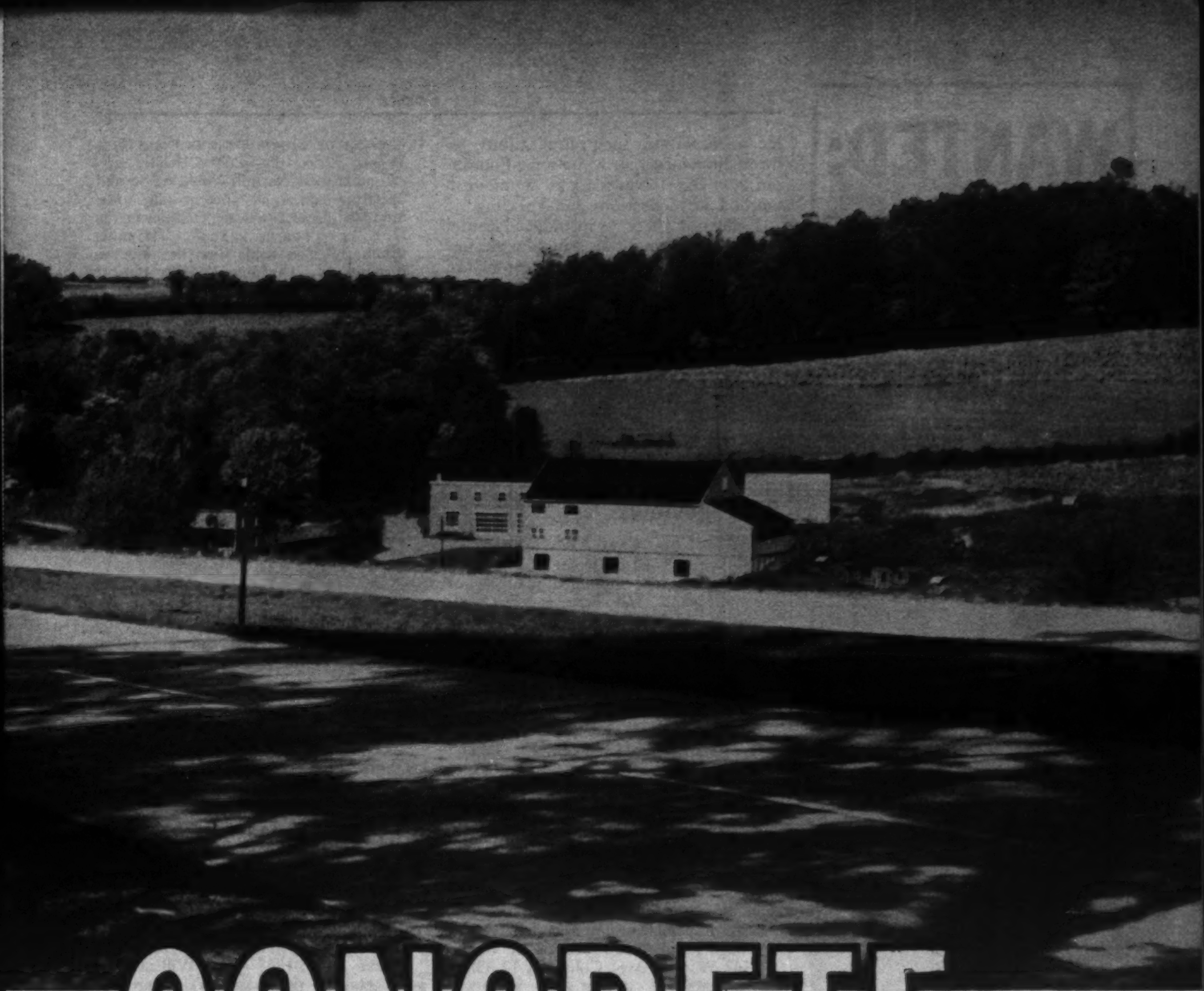

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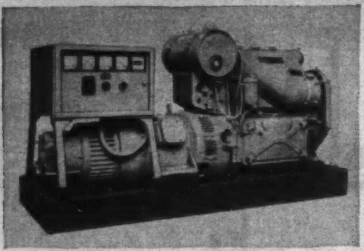

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He incorporates such applications as finite difference approximations, Fourier series, and Newmark's numerical method for deflections and buckling.

Deflection theory is introduced at the beginning, laying the groundwork for a chapter on the basic principles of indeterminate structures. Several methods for analyzing such structures are then presented—moment distribution, slope deflection, elastic center, column analogy and work and energy methods.

Subsequent chapters deal with influence lines, the effects of varying moment of inertia, arch theory, cables, structural dynamics and columns.

Brief Reviews

IRRIGATION AND RURAL WATER USE IN OHIO—A 57-page report by Arthur Woldorf is well illustrated with photographs, graphs, and charts; and text analysis of rural water use and problems. There are 17 tables which itemize and locate quantities of water used, sources, kinds of crops, types of soil, number of irrigators, acres irrigated, etc. A five-color 16x20 in. map shows potential irrigability of Ohio's soils. Division of Water, 1562 W. First Avenue, Columbus 12, Ohio.

WATER USE IN OHIO—The 50-page report by Anthony Rudnick estimates that water demand in Ohio will double within about 25 years and by the year 2000 will reach 26 billion gallons daily. The study is one of a series of four water-use inventory reports to be presented. It discusses uses of water, public and private supplies, water disposal, consumption of water, and droughts and floods. Division of Water, 1562 W. First Ave., Columbus 12, Ohio. 50 cents.

BASIC DATA ON TVA AND ITS REVENUE BOND FINANCING—The basic data file describes the TVA power system, its operations and service area, and provides details of the bond-financing legislation. Director of Information, Tennessee Valley Authority, Knoxville, Tenn. Free.

THE MEMBRANE FILTER—A 12-minute film gives advantages and disadvantages of the membrane filter over other methods used for the examination of water. Available on short-term loan from Communicable Disease Center, Public Health Service, Department of Health, Education, and Welfare, P. O. Box 185, Chamblee, Ga.

LAMINATED - WALL, BITUMINIZED - FIBRE DRAIN AND SEWER PIPE—Commercial Standard CS226-59 covers uses, general requirements, dimensions, physical and chemical properties, and methods of testing laminated-wall, bituminized fibre drain and sewer pipe (including straight couplings and five-degree-angle couplings), in diameters ranging from two to eight inches and in lengths of four or more feet. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 10 cents.

INVENTORY OF MUNICIPAL AND INDUSTRIAL WASTE FACILITIES—Public Health Service publication No. 622 lists physical and operating data on all municipal and some industrial waste treatment facilities in the U. S., as of January 1, 1958. The nine-volume set is available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. $10.25.

ADDENDUM TO PUBLIC HEALTH SERVICE PUBLICATION No. 526, MANUAL OF SEPTIC TANK PRACTICE—Addendum describes improved method of constructing household septic tank sewage disposal systems. Copies are available from the Public Inquiries Branch, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C., or the Manual with the Addendum may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. 35 cents.

THE USE OF PLASTIC PIPES FOR WATERWORKS PURPOSES—Communication No. 2 of the Committee for Plastic Water Pipes, Institution for the Testing of Waterworks Materials, KIWA, Delft, Holland.

WATER METERS, SELECTION, INSTALLATION, TESTING, AND MAINTENANCE—Committee on Meters of the American Water Works Association has prepared the 88-page manual. AWWA, 2 Park Ave., New York, N. Y. $1.25.

Just Published . . .

THE JOHNSONVILLE STEAM PLANT—Technical Report No. 31. 678 pages. Tennessee Valley Authority, Knoxville, Tenn. $5.00.

ARMY EXPLORATION IN THE AMERICAN WEST 1803-1863—By William H. Goetzmann. 509 pages. Yale University Press, New Haven, Conn. $6.50.

ELECTRONIC COMPUTERS: PRINCIPLES AND APPLICATIONS—Second edition, by T. E. Ivall, 263 pages. Philosophical Library, Inc., 15 E. 40th St., New York 16, N. Y. $15.00.

REINFORCED CONCRETE COLUMN TABLES ULTIMATE STRENGTH DESIGN—By Hugh F. Fenlon. Hugh F. Fenlon, 424 Mortgage Guarantee Building, Atlanta, Ga. $15.00.

1959 SUPPLEMENTS TO BOOK OF ASTM STANDARDS—10 parts. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $40.00 per set.

ASTM STANDARDS ON LIGHT METALS AND ALLOYS—B-7. 368 pages. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $4.50.

BITUMINOUS PAVING MATERIALS—STP 252. 238 pages. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa. $5.50.

TAMING OF THE SAULT—By John H. Brior, 111 pages. John H. Brior, 1212 Madison Ave., Watertown, N. Y. $1.25.

AMERICAN BUILDING ART—THE NINETEENTH CENTURY—By Carl W. Condit, 371 pages. Oxford University Press, 417 Fifth Ave., New York 16, N. Y. $12.50.

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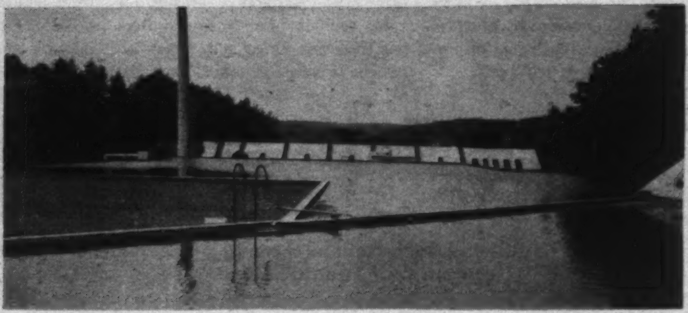

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Contract Variations Are Not Fatal

Doctrine of substantial performance lets contractor recover despite defects or omissions in work

Under the doctrine of substantial performance, a contractor is entitled to recover the contract price less the amount required to bring the work in compliance with the contract.

A situation that called for use of the doctrine arose recently in Louisiana where a contractor had agreed to construct an ice storage bin of a given capacity. The bin, when built, was less than the specified size. But the owner used it for two years, producing ice and serving customers. There were only a few occasions when the plant was unable to meet the demand.

When the owner sued to recover damages for the breach, the contractor counterclaimed for the balance due under the contract.

The court held that while there was a serious deficiency in the required size of the storage bin, the deficiency was not enough to require the contractor to tear the plant down. It allowed the contractor to recover the contract price less the cost of moving the compressors from the first to the second floor, thus making available extra space for the storage of ice.[1]

The court stated: "The law with reference to compliance with construction contracts in Louisiana is fairly clear. In fact, it seems to be the only area in which the parties find themselves in agreement. In interpreting the relevant articles of the Louisiana Civil Code, the courts of Louisiana have outlined what has come to be known as the doctrine of substantial performance. Under this doctrine, where the contractor has substantially performed the contract, he is entitled to sue for the contract price, the burden of proving damage resulting from failure of the contractor to perform to the letter of the contract being on the owner. Under this doctrine the contractor is entitled to full payment minus the amount required to bring the building in complete compliance with the contract. Substantial performance is said to exist when the object of the contract may be used for the purpose intended but there nevertheless exist certain defects or omissions in construction. If the object, however, cannot be used for the purpose intended because of failure to comply with the provisions of the contract, the doctrine of substantial performance does not apply. In that circumstance, the owner may require the contractor to remove the object from his land and restore the premises to their prior condition. In addition, the owner is entitled to damages."

The contractor produced testimony to show that the amount of storage space could be increased by removing the compressors which were on the ground floor to the second floor. The court found that the cost of doing this would be $25,000, which amount it deducted from the amount due the contractor.

The court further found that the occasions when the plant was unable to meet the demand for ice were few and far between and that under these circumstances the court held that: "In good conscience, it would be wrong to require the defendant (contractor) to tear down and remove this entire plant merely because of lack of contract storage capacity. This is precisely the kind of situation contemplated by the doctrine of substantial performance. It is an equitable doctrine developed by the Louisiana courts as a gloss on the articles of the Louisiana Civil Code. It is the doctrine which must be applied here."

(1) Jerrie Ice Company v. Col-Flake Corp., 174 F. Supp. 21, U.S. District Court, Louisiana, May 27, 1959.

Liquidated Damages Approved

A contract provision for liquidated damages for delayed performance will generally be enforced by a court unless the contractor can prove that the amount constitutes a penalty.

The test used by an Iowa court in a recent case is whether the amount specified in the contract is a fair approximation of the damage sustained. The facts were these:

A contractor brought an action to recover the balance allegedly due for the performance of a construction contract.

The party for whom the work was done counterclaimed liquidated damages at the rate of $40 per day for delayed performance. The contractor was granted a recovery, less $1,200 allowed the owner as liquidated damages for delayed performance.

The court stated: "The court rules as a matter of law that the provision in the contract for the payment of liquidated damages in the event that the project was not completed on or before July 1, 1955, was a lawful provision and that it ought to be enforced within reason. This was a public contract and it was highly proper for the board of supervisors to provide for liquidated damages in the event of failure to complete it on time. It is, of course, practically impossible to determine in advance the actual damages which may be sustained to the public on account of a failure to timely complete a public work of this nature. The court finds that the provision for $40 per day is a fair approximation of such damage, and that the provision in the contract is therefore legitimate and lawful and is not to be interpreted as a penalty. The burden is on the contractor to show otherwise."[1]

(1) Korshoj Construction Co., Inc. v. Mills County, Iowa, 156 F. Supp. 138.

Language of a Contract Is Not Easily Upset

Where the terms of a contract are clear and unambiguous, oral testimony is not admissable to vary its terms.

"In accordance with the modern tendency (IX Wig. Ev., 3rd Ed., Section 2465) it has long been the rule here that the facts surrounding an undertaking, including conversations in preliminary negotiations, are admissible to aid in interpreting an agreement. Kendall v. Green, 67 N.H. 557, 562, 42 A. 178, and authorities (decided 1893); Weston v. Ball, 80 N.H. 275, 276-277, 116 A. 99; Kann v. Wausau v. Abrasives Company, 85 N.H. 41, 46-47, 153 A. 823; Perry v. Champlain Oil Company, 99 N.H. 451, 454, 114 A. 2d 885. However this does not mean that when the parties finally integrate their negotiations into a written agreement in plain, unmistakable terms, parol or other evidence of preliminary negotiations can be introduced to vary or contradict its terms. (Citing numerous cases)."[1]

(1) Lefebvre v. Waldstein, Supreme Court of New Hampshire, Nov. 28, 1958.

(*Legal continued p. 176*)

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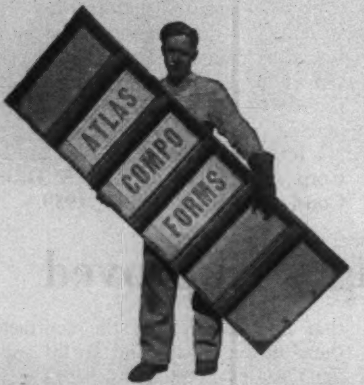

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Could Sue On Indemnity Clause

Settlement did not bar suit against contractor

A New Jersey court has ruled that an owner who has been sued for damages for injuries to a construction worker can later seek to collect the damages from the contractor under an indemnity clause in the contract, even though the first claim was paid as a result of voluntary settlement of the case.

The facts before the New Jersey court were these.

The owner of a building brought an action on an indemnification agreement for certain losses it sustained resulting from an accident to an employee of the contractor who had contracted to convert a one-story brick building in Jersey City into a garage.

The contract for the alteration work contained the following indemnification agreement: "Responsibility for Accidents. The contractor shall bear all loss or damage from accidents which may occur to any person or persons, by or on account of the prosecution of the work, until possession is taken by the owner. The contractor must provide all legal and necessary guards, railings, lights, warning signs, etc., during the progress of the work."

The contract also provided that: "The Contractor shall carefully examine the premises before submitting his bid. No allowance will be made him for lack of knowledge of all conditions, except such underground conditions as are indeterminable before the beginning of the work. The submission of a proposal will be construed as evidence that such a visit and investigation has been made and later claims for labor, equipment or materials required or difficulties encountered will not be considered."

During the prosecution of the work, an employee of the contractor was injured while at work, when a part of the ceiling fell on him. The owner claimed that the injury resulted from the stripping of a partition wall of plaster by heavy blows of a crowbar or hammer administered by the employee. As the stripping of the plaster was part of the work to be performed under the contract, the contractor, he said, was liable for the injury sustained by the employee. When the employee instituted an action against the owner to recover the damages sustained as a result of such injury, the owner requested the contractor to undertake the defense of the action, which he refused to do.

The action brought by the injured employee was dismissed by the trial court, but this judgment was reversed on appeal, the appellate court holding that sufficient evidence had been produced at the trial from which the jury might conclude that the injured employee was an invitee on the premises and was injured by reason of a defect in the ceiling of which the owner had notice, constructive or actual.

After the appellate court ordered a new trial the owner's insurance company settled the claim for $53,000. No notice of the settlement was given to the contractor before the settlement was actually executed.

An action was then brought against the contractor to recover the amount paid to the injured employee in settlement of his claim. The trial court dismissed the action on the ground that the voluntary settlement of the claim prevented the possibility of a judicial determination of whether the accident resulted from negligence on the part of the owner. This judgment was reversed on appeal[1], the appellate court holding that under the contract indemnification clause, the owner's right to indemnification was not automatically defeated by their settlement of the claim, if such action was taken in good faith, and reasonable under all the circumstances of the case.

(1) Stern v. Larocca, 140 A. 2d 403.

Repudiation of Contract Gives a Choice of Action

Various remedies are available when a contract is repudiated by one of the parties to it.

"It is well settled that where one party repudiates the contract, and refuses longer to be bound by it, the injured party has an election to pursue either of three remedies: He may treat the contract as rescinded, and recover upon a quantum meruit (value) so far as he has performed; or he may keep the contract alive for the benefit of both parties, being at all times himself ready and able to perform, and, at the end of the time specified in the contract for performance, sue and recover under the contract; or he may treat the repudiation as putting an end to the contract for all purposes of performance, and sue for the profits he would have realized if he had not been prevented from performing."[1]

(1) Izzo v. City of Loves Park, 155 N.E. 2d 312, Appellate Court of Illinois, Jan. 16, 1959 and cases there cited.

(*Legal continued p. 178*)

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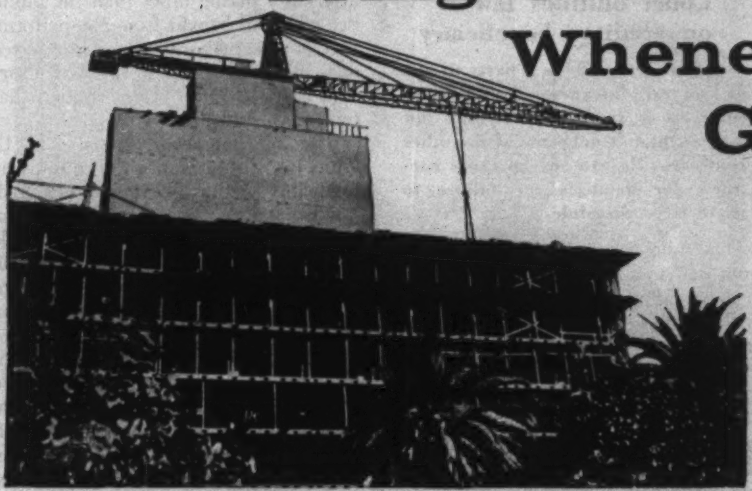

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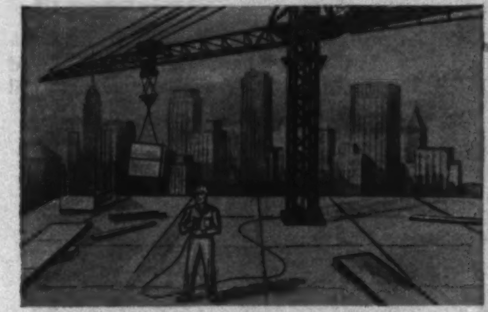

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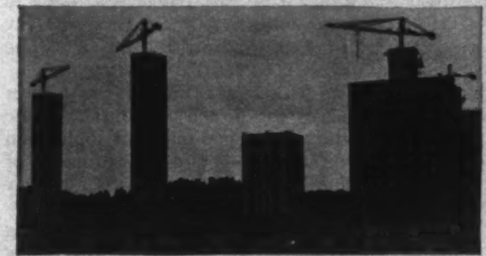

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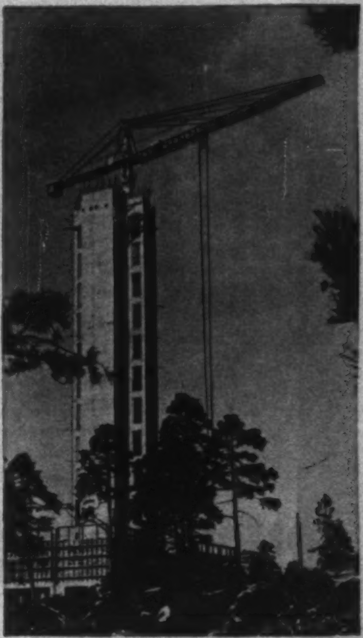

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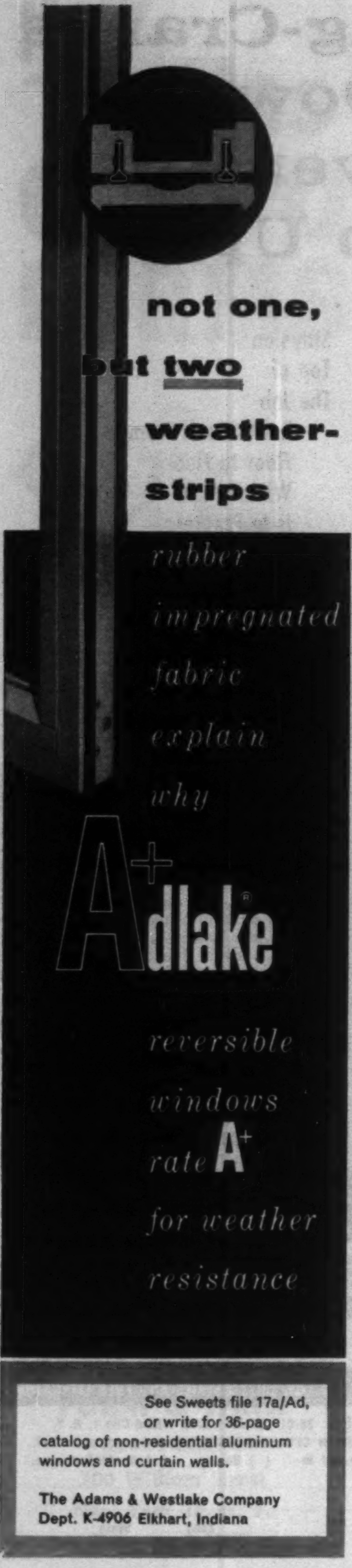

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CIRCLE 178 ON READER SERVICE CARD

Allowed to Sue as Third Party

Court outlines law on creditor beneficiary

A contractor who is a party to one of several integrated construction contracts is viewed under Ohio law as a creditor beneficiary of the other contracts. He can sue on those contracts for damages for failure to perform on schedule.

The following case outlines the Ohio approach to such a situation.

Two railroad companies contracted with the State of Ohio to perform various parts of the work required in the elimination of a grade crossing in the City of Fostoria. The city also undertook to perform part of the work. The contracts with the City of Fostoria and the railroads did not cover all of the necessary work to be done on the project, the balance of which was to be performed under a separate contract and which was accordingly entered into at a later date, between Visintine Company and the State of Ohio.

Each of the separate contracts provided that the work should be performed in accordance with the plans and specifications submitted for the project and in the sequence designated. The nature of the work was such that none of the parties could perform its part in a single operation, but numerous ones were required and the time when each was to be performed was specified and spelled out in the plans and specifications agreed upon. These contracts were subsequently carried out and the project completed.

Thereafter, the Visintine Company brought an action against the railroad companies to recover the damages it had sustained by reason of the railroad companies having failed to perform their part of the work in accordance with the schedule set forth in the contract. The action was dismissed by the trial court, but this judgment was reversed on appeal,[1] and a new trial ordered.

The trial court was of the opinion that Visintine was only an incidental beneficiary of the contracts between the railroads and the State of Ohio, and therefore had no right of action against the railroads, citing Chapter 6 of Restatement of the Law of Contracts, Sections 133-147, to the effect that the law is well settled that an incidental beneficiary to a contract may not maintain an action on the contract if it is not a party.

The appellate court, however, cited section 133 (b) of Restatement of the Law to the effect that a creditor beneficiary is a person other than the promisee who will benefit from the performance of an actual or supposed or asserted duty of the promisee to the beneficiary and that Visintine came under that category.

The appellate court stated: "In 11 Ohio Jur. 2d, Section 180, we find the following: 'A third party who is a creditor beneficiary may generally maintain an action at law upon a promise made for his benefit by another. A person falls within this designation of creditor beneficiary if performance of the promise will operate to discharge a real or a supposed or alleged duty, and is not intended as a gift. It is sufficient to support the contract itself, if the promise is made by the promisor upon a sufficient consideration passing between him and the promisee; when the third person adopts the acts of the promisee in obtaining the promise for his benefit, he is brought in privity with the promisor and may enforce the promise as if it were made directly to him.'"

(1) Visintine & Co. v. New York, Chicago & St. Louis R. Co., 155 N.E. 2d 682, Court of Appeals of Ohio, April 29, 1959.

Breach of Contract Issue Subject to Arbitration

An arbitration clause in a construction contract may be broad enough to cover a dispute over damages for breach of contract.

A New York court, faced with an arbitration clause, has denied the right to litigate damages in the absence of any attempt to arbitrate the dispute. The facts were these:

An action was brought to recover damages for breach of contract. One of the parties sued made an application to dismiss the action on a number of grounds or, in the alternative, to stay the action pending arbitration.

The contract contained the following provision: "All questions that may arise under this contract and in the performance of the work thereunder shall be submitted to arbitration at the choice of either of the parties hereto . . ."

The party bringing the action claimed that the clause did not cover a claim for damages for breach of contract. The court held otherwise and stayed the action pending arbitration. The Court[1] stated: "In Zimmerman v. Cohen, 236 N.Y. 15, 139 N.E. 764, 765, it was held that the defendant could have compelled arbitration in a breach of

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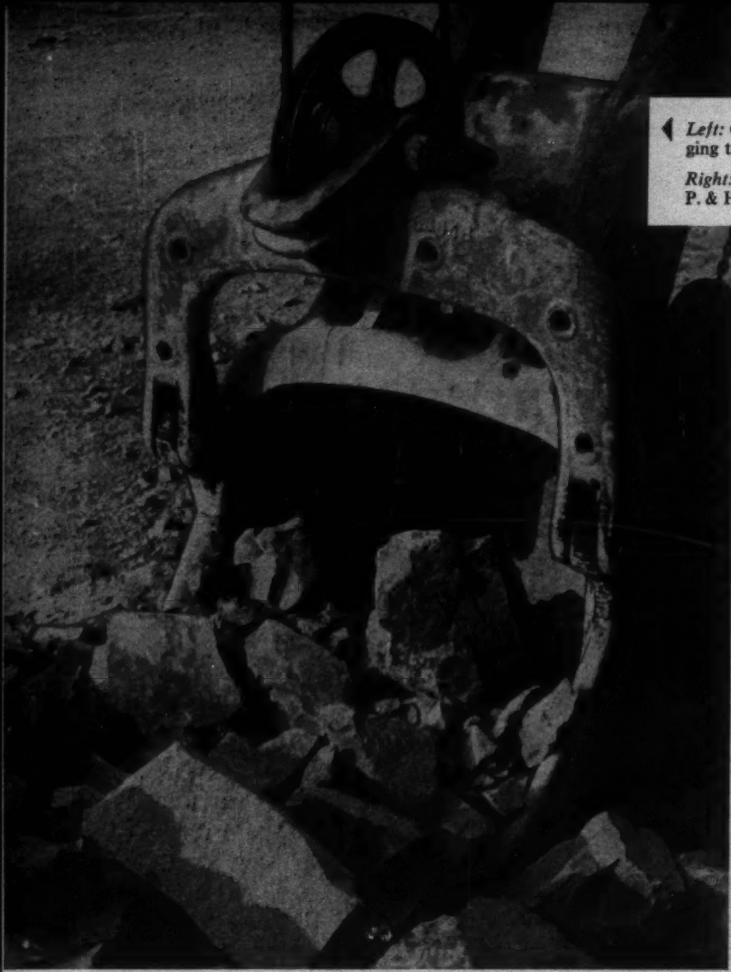
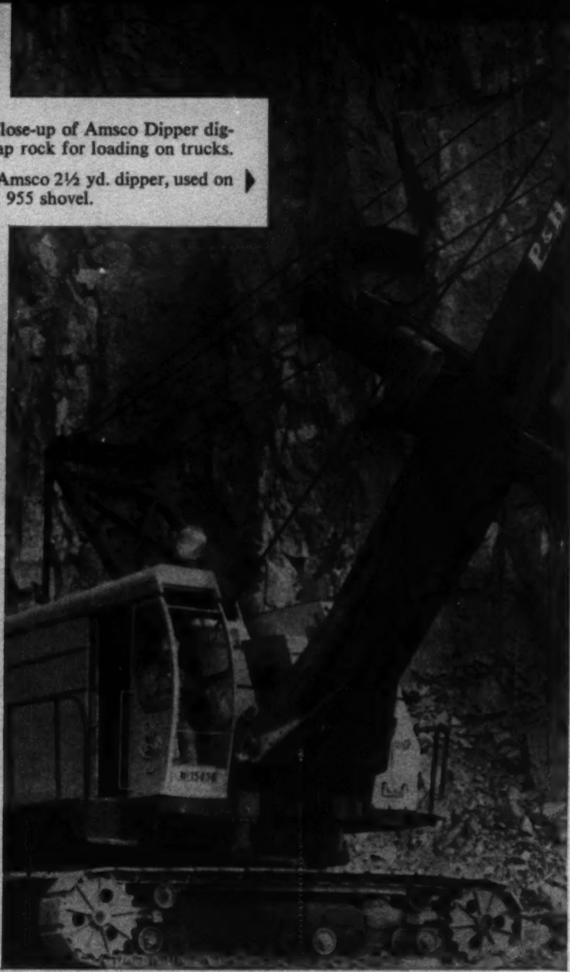
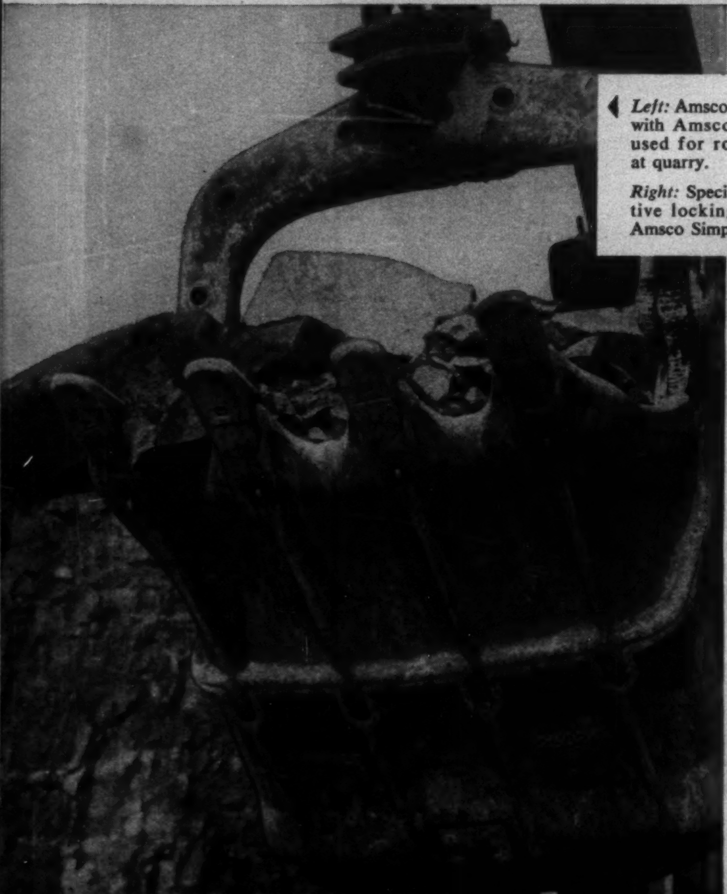


◀ *Left:* Close-up of Amsco Dipper digging trap rock for loading on trucks.

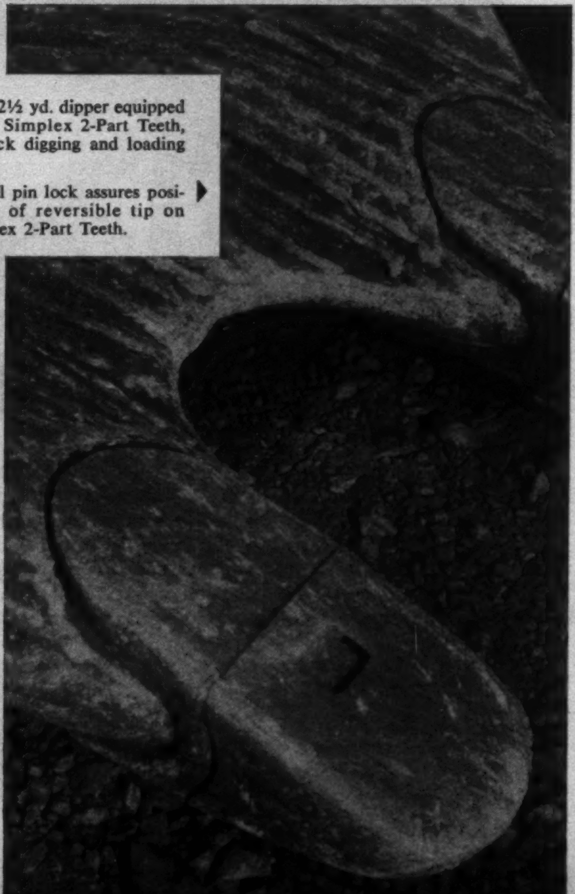
Right: Amsco 2½ yd. dipper, used on P. & H. 955 shovel. ▶





◀ *Left:* Amsco 2½ yd. dipper equipped with Amsco Simplex 2-Part Teeth, used for rock digging and loading at quarry.

Right: Special pin lock assures positive locking of reversible tip on Amsco Simplex 2-Part Teeth. ▶



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*Patent No. 2,904,908

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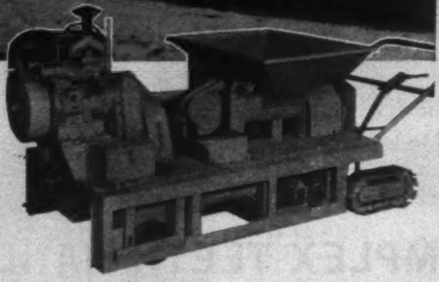

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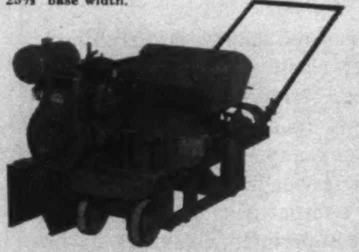

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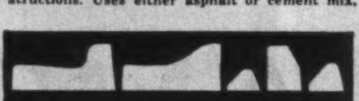

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contract case, where the language used was:

"'Any differences arising between the parties to this contract shall be settled by arbitration in New York . . .'

"It will be noted that these clauses are very similar and the substitution of the word 'questions' for the word 'differences' would seem to connote no significant variation in meaning."

The court referred to another case, Marchant v. Mead-Morrison Co., 252 N.Y. 284, 169 N.E. 386, where the court held that an agreement to submit "all controversies growing out of" a contract to arbitration, or a "substantially equivalent" phrase, is authority to assess damages for a breach, but where there is only a narrow authority in the arbitrators to determine questions of meaning and performance, then there is no authority to go beyond these items.

The court held that the arbitration clause in the contract in question has much more of the "all controversies" import.

(1) Dias v. De Lillo Construction Co., 181 N.Y.S. 2d 258, N.Y. Supreme Court, Oct. 24, 1958.

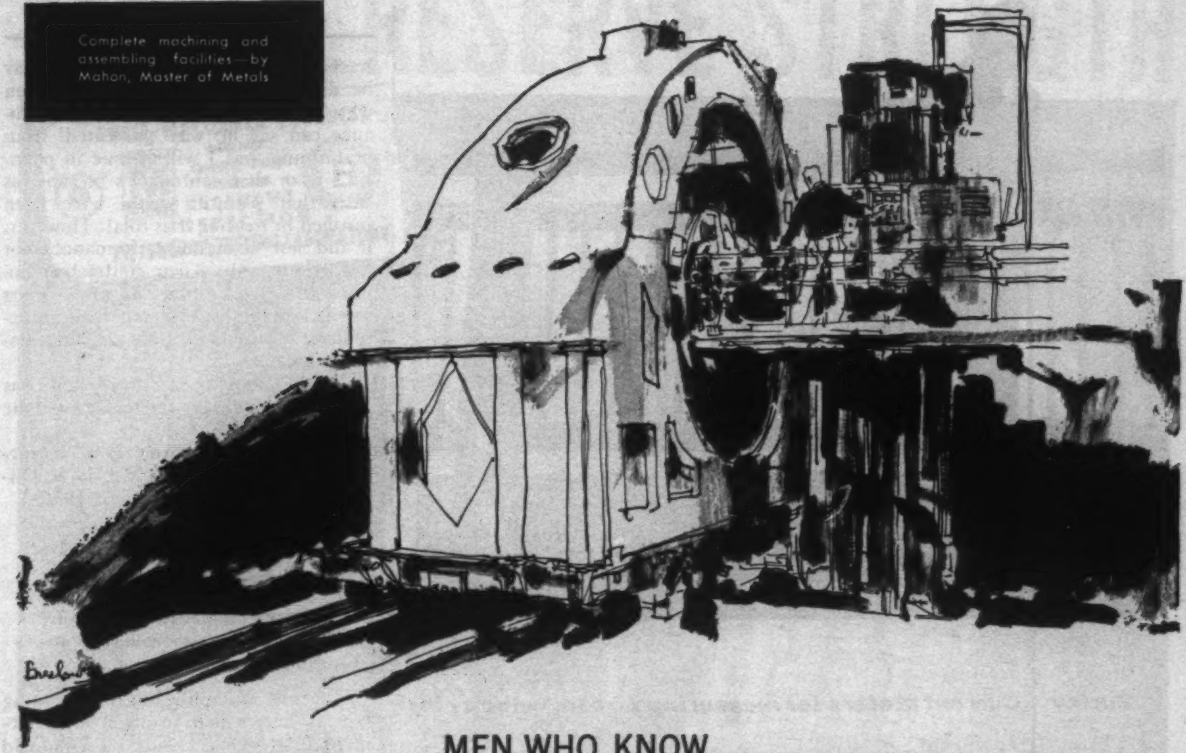
Various Remedies Exist For Breach of Contract

An owner's failure to make progress payments as called for by a contract constitutes a breach of the contract. The breach entitles the contractor to recover the value of the work performed plus loss of profits from being prevented from completing the work.

Where, in spite of the default in progress payments, the contractor continues and substantially completes the work, he cannot recover on the basis of fair and reasonable value. Since he has completed the work, he cannot claim he had been prevented from performing it.

That was the conclusion of a federal court which, in a Massachusetts case, stated:

"It is true that when one party to a contract acts in total breach of his obligation, the other may cease performance, and rather than sue for damages, that is, his outlay to the date of the breach plus lost profits, United States v. Behan, 110 U.S. 338, 344-346, 4 S. Ct. 81, 28 L. Ed. 168; Bucholz v. Green Bros. Co., 272 Mass. 49, 172 N.E. 101, he may rescind and seek to restore the status quo, in which case recovery may be measured by the value of the services not limited by the contract price. Connolly v. Sullivan, 173 Mass. 1, 53 N.E. 143; United States for Use of Susi Contracting Co. v. Zara Contracting Co., 146 F. 2d 606; 5 Williston on Con-



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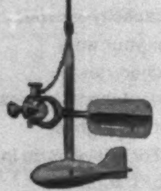

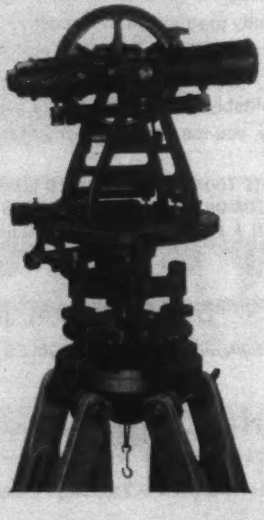

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tracts, Rev. Ed., Section 1485. It may be difficult to see here how a person who can and does complete performance can say he was 'prevented' from performing, but I will assume in plaintiff's favor that contractor's breach was such that plaintiff would have been justified in treating it as total. However, it did not abandon performance, nor did it enter into a new contract or implied contract for the fair value of its services as the price of not treating defendant's breach as total. (Citing numerous cases.)"

In the above case the action was brought by a subcontractor against the prime contractor.

(1) United States v. Americo Construction Co., 168 F. Supp. 760, U. S. District Court of Mass., Dec. 5, 1958.

Contractor Not Entitled To Damages He Caused

A person who breaches a contract is in no position to collect damages resulting from the breach.

This rule was applied in the following federal case which involved an agreement to stockpile ballast for a railroad job.

Lookout Point Constructors, as the general contractor for a railroad job, entered into a contract with Curtis Gravel Company, whereby the latter was to furnish all the ballast material required, stockpiling it alongside the road and placing it in the contractor's cars. The contract provided that the gravel company agreed to begin stockpiling May 1, 1951 and to complete it by October 11, 1951.

The gravel company began producing ballast in late August, 1951, and could have completed the job by October. However, due to delays of other contractors working on related sections of the project, the contractor was unable to determine its requirements until May, 1952. Prior to October, 1951, completion date, the gravel company made several requests of the contractor for a final determination of its requirements. The contractor was unable to compute its final requirements at that time but promised to do so as soon as possible.

Having produced and stockpiled 58,434 yards of ballast for which the agreed price was $128,554.80 and receiving no estimate of any further requirements, in late February, 1952 the gravel company dismantled and moved out its rock-crushing plant. The contractor was subsequently forced to purchase an additional 12,800 cubic yards from other sources in order to complete the contract. The difference between the sub-

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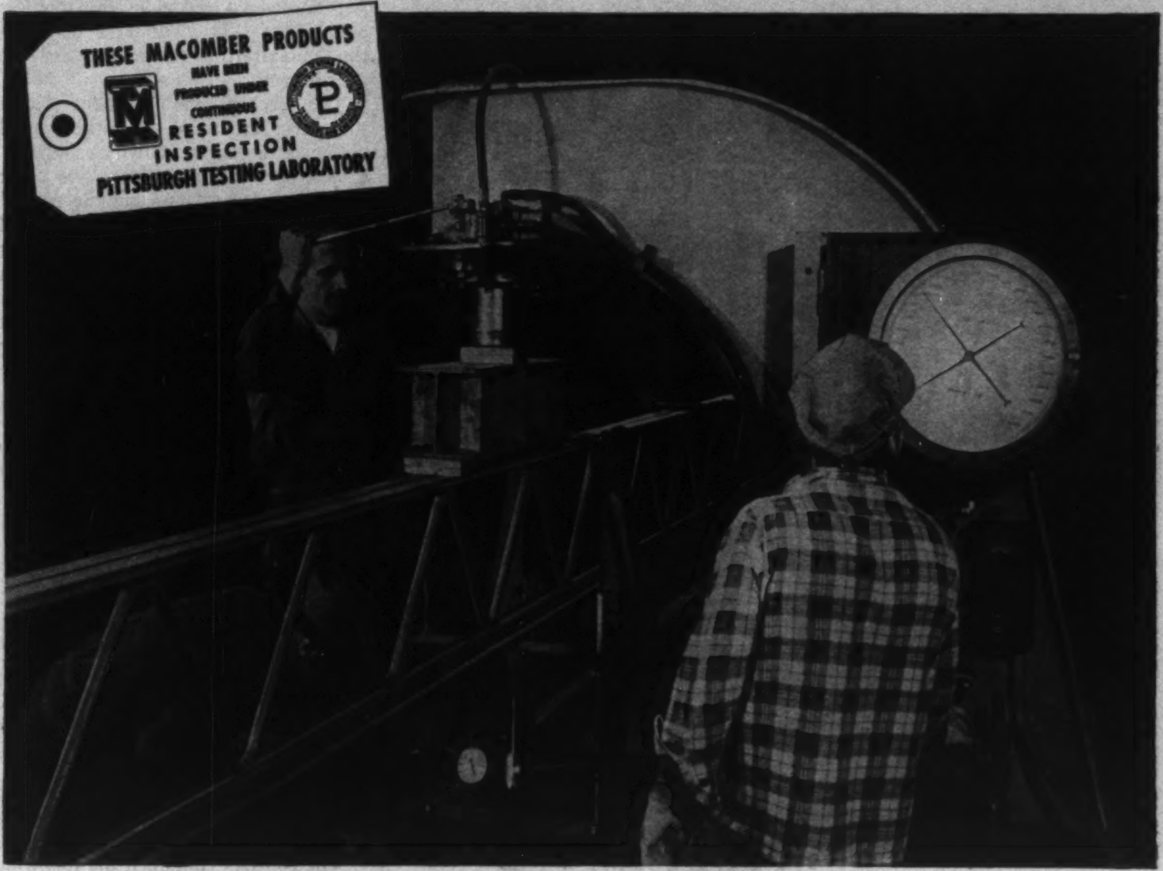

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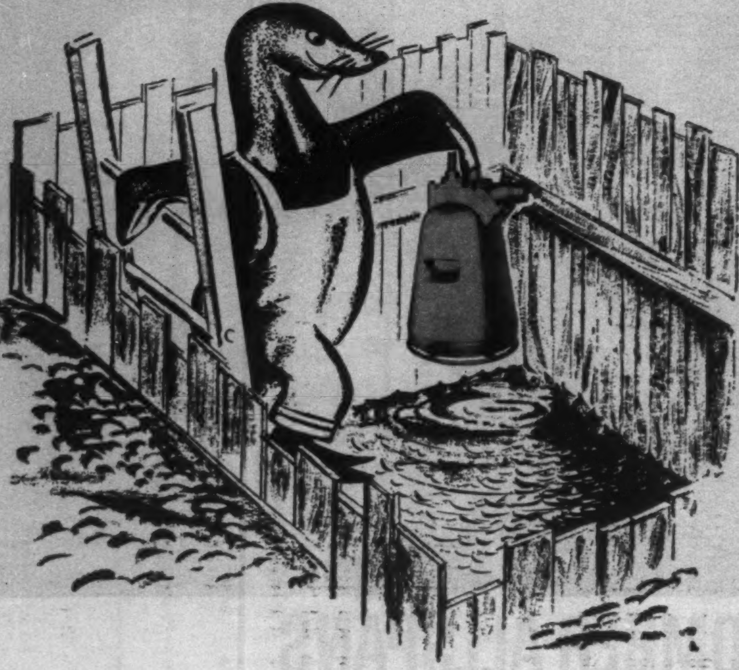
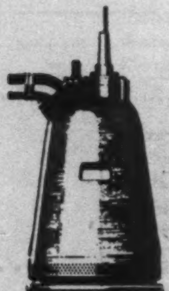


Construction jobs, utility companies, public works, mining and quarrying . . . all are faced with the danger of too much water at some time. Flygt electric submersible pumps, today's newest and most modern, meet any emergency head on — go right in over their heads to put out up to 3100 GPM; heads to 220 feet. They're easily portable — move from job to job with a minimum of manpower. Flygts can be run day and night with little or no maintenance and no supervision — even run dry for hours without burnout. Get the entire Flygt story for yourself. Send for illustrated brochure covering the complete line, then ask to see a Flygt in action on the job you select.



FLYGT Corporation

57-4

HOOSICK FALLS, N. Y.

WESTERN SALES & SERVICE: STANCO MFGS. & SALES INC., 1666 Ninth St. (Corner of Olympic) Santa Monica, Calif.

PUMP BETTER ELECTRICALLY—USE FLYGT!

contract price of the ballast material and the higher price paid for the ballast needed to complete the job was $9,872.70. The contractor deducted this amount from the money due the subcontractor.

The subcontractor brought an action to recover the money so withheld and obtained a judgment which was affirmed on appeal,[1] the appellate court holding that the failure on the part of the contractor to notify the gravel company of the amount of ballast that would be needed constituted a breach of the contract and the gravel company was under no obligation to keep on stockpiling the material without being informed as to the amount of ballast that would be needed.

(1) Lookout Point Constructors v. Curtis Gravel Company, 259 F. 2d 1, U.S. Court of Appeals, Ninth Circuit, Sept. 8, 1958.

Oral Evidence Allowed On Date of Contract

Oral evidence is admissible to show that the date named in a contract is not the date that it was executed.

Such evidence was allowed by a Maryland court under the following circumstances:

A contractor brought an action to recover a balance due for work performed under the contract.

The contract contained the following provision: "The work performed under this contract shall be commenced immediately and shall be substantially completed in 330 days." One of the defenses of the owner was that the work was not completed within the time specified in the contract.

The contract was dated August 29, 1956. The contractor offered evidence to show that he did not execute and deliver the contract to the owner until September 19, and that the date to start performance should be September 19, and not the date in the written contract. The court sustained the contractor's contention which was affirmed by the appellate court.[1]

(1) Eastover Stores Inc. v. Minnix, 150 A. 2d 884, Court of Appeals of Maryland, May 6, 1959.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

steel pipe

keeps the steel blades flying

This blossoming business of community ice skating has grown into a sizeable—and profitable—market. Best assurance of profitability for the installation of an ice-making system is the elimination of costly maintenance and repairs. It's a job that calls for strong, durable *steel pipe.*

With dependable *steel pipe* there's no danger of damaging the refrigerant lines, no bending and sagging. *Steel pipe* has *proved* its place in many applications like this.

Whenever there's a new application, it pays to stay with dependable, time-tested materials. The skating rink is just another example of the many kinds of jobs that *steel pipe* can do *best.*

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

INSIST ON PIPE MADE IN U.S.A.

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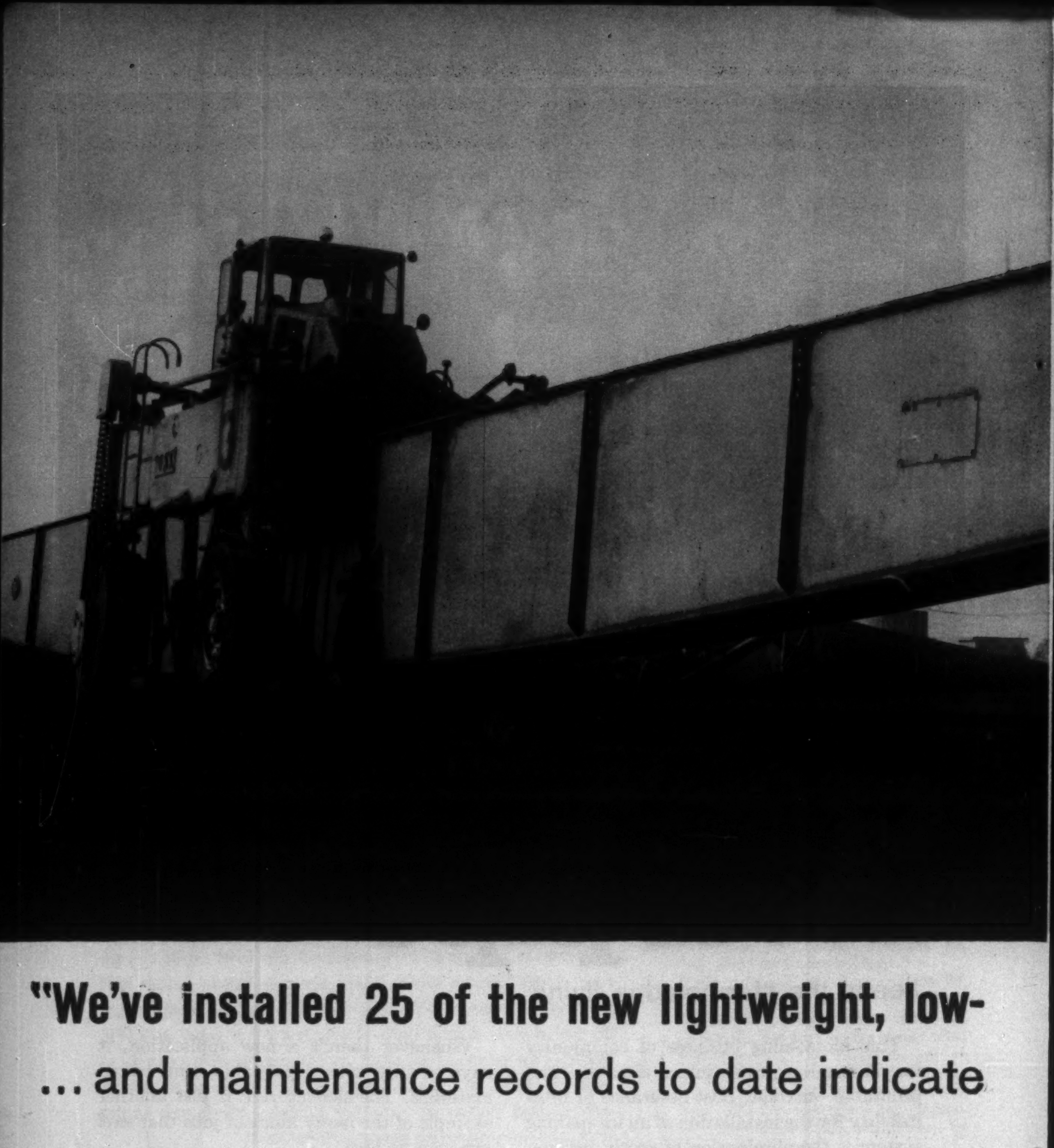


"We've installed 25 of the new lightweight, low-

... and maintenance records to date indicate

The Timken Roller Bearing Company is a long-time user of Hercules diesels. In fact, one of the Ross carriers purchased by the firm for a fleet now numbering 20 is powered with a Hercules diesel that has logged more than 17,000 trouble-free hours to date—with only normal preventive maintenance. With this kind of experience, the Timken Company was quick to investigate the new Hercules diesel line when it was released.

Some 25 of the new Hercules engines, ranging from three cylinder sizes to the large, six-cylinder, multi-fuel D-426, are installed in materials handling equipment serving the firm's Steel & Tube Division. Many of these engines have compiled service records of over 2000 hours, with negligible service expense. They give plenty of power for the job, too, even though many of them have replaced heavier, larger displacement diesels.

"If present indications are a guide," says Ed Gumpf, "these new Hercules diesels will be the best investment, in terms of engine-cost-per-hour-of-service, that we've ever made."

The new Hercules diesels, available in a range from 50 to 175 horsepower, are proving more economical to buy and less costly to own for many engine users.

For complete details, call the Hercules distributor near you or return the coupon, at right, to Hercules Motors Corp., Canton 2, Ohio.

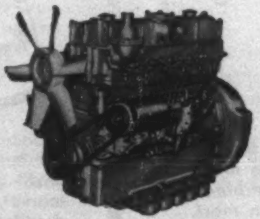
CIRCLE 188 ON READER SERVICE CARD

cost Hercules Diesels in our equipment

they will save us money"

says Ed Gumpf, Supt. of Materials Handling, Steel & Tube Division, The Timken Roller Bearing Co.

Hercules D-426 Polydiesel engine can burn diesel fuel, gasoline, kerosene, even JP-4, interchangeably.



HERCULES

WATCH HERCULES FOR THE 'NEW LOOK' IN ENGINES

Hercules Motors Corp.
Canton 2, Ohio

Gentlemen:

Please send me information on your new lightweight, low-cost diesel engines.

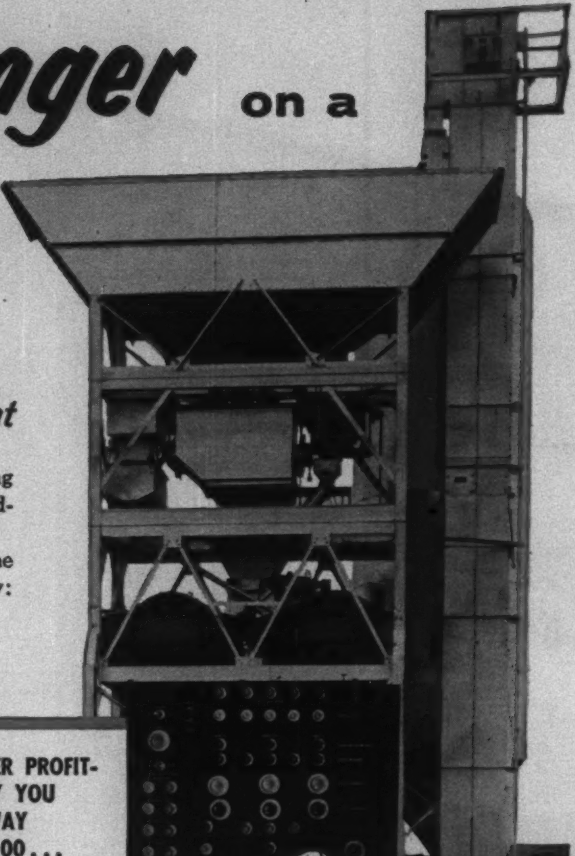
Name______________________________
Firm______________________________
Address______________________________
City______________Zone______State__________

A LIMITED NUMBER OF HERCULES DISTRIBUTOR FRANCHISES ARE AVAILABLE—WRITE FOR DETAILS

Put your finger on a

NEW, PROFITABLE READY MIXED CONCRETE MARKET

. . . Sell concrete for highway construction with a BUTLER HP-85 Portable Ready Mixed Concrete Plant



READY MIXED OPERATORS . . . Take advantage of the swing to ready mixed for highways. It's a new source — an additional source — for substantial profits.

And the highway contractor will welcome you as a prime contributor to greater earnings in his pocket. Here's why:

With his purchase of ready mixed concrete from you, he eliminates a $50,000 dual drum paver.

And he eliminates a high-priced, 5 man paver crew

— as well as a batching plant and batch trucks.

With concrete from your completely automated BUTLER HP-85 *Portable* Plant, the contractor gets a uniform, inspector-pleasing, non-segregated mix, pin-pointed to any specfication —

and he speeds up his job with less supervisory headaches and overhead.

Production up to 200 cubic yards an hour

A Butler HP-85 *Portable* Ready Mixed Plant, completely automated, equipped wtih two turbine-type mixers, easily charges your transit mix trucks at the rate up to 200 yards an hour. That's enough to keep ahead of any highway demand — without a single bead of sweat.

And Butler simplified, in-place, quick-connected automation is interlocked against human error. You have faster batching for every material, water included, with a perfection in accuracy that makes friends of tight specifications, the inspector and your contractor-customer.

CONCRETE PLANT CPMB MANUFACTURERS BUREAU

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION

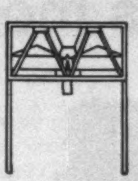
WITH BUTLER PROFIT-PORTABILITY YOU SELL HIGHWAY CONCRETE 100 . . . 200 . . . 500 MILES FROM YOUR OFFICE

Here's a picture story of transport and erection — the ultimate in portability.

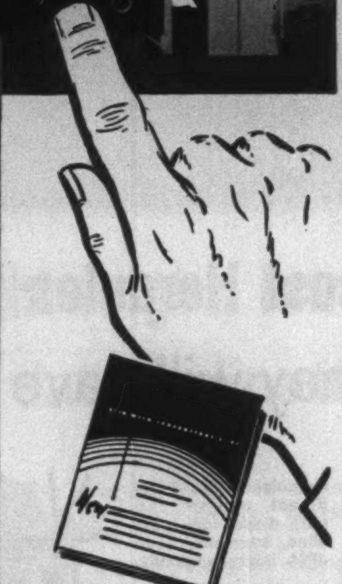
- The compartmented bin section ships complete with lugs attached for crane lift.

- Batcher section is a complete unit with all piping, wiring, batchers and automatic controls in-place, ready for plug-in.

- Mixer section is also a complete unit with two turbine mixers, gates and controls pre-installed. Circuitry is completed with plug-in quick connectors. Support columns ship separately. These are quickly pinned to the mixer platform and swing into place as the mixer section is raised.



On a highway job, a move to the next section is made as quickly as with a batching plant — in fact faster than most.



For healthy business and profit growth in this new market, send for the new, detailed BUTLER HP-85 Bulletin. Just jot your request on a postcard. You'll get a prompt reply.

BUTLER BIN COMPANY
947 Blackstone Avenue • Waukesha, Wisconsin

Want More Information on Equipment, Materials?

Use ENR's inquiry card to order the publications you want all at once. The card is on page 219.

Construction Equipment

Truck mixer loading plant

Automatic material handling and batching for a truck mixer loading plant described in a four-page illustrated bulletin together with data on production electric control system and optional features. Blaw-Knox Co. 401

Concrete mixing plants

Six-page bulletin describes three transit-mix concrete plants—the 68-ton Roustabout, the 80-ton Econoplant and the 178-ton Jumbo. C. S. Johnson Co. 402

Automated batch plants

Covers Rex punch-card automation for automatic batching of concrete and asphalt. Explains how system eliminates guess work and human error for batches varying in ¼ yd. increments. Chain Belt Co. 403

Batching plants and equipment

Four-page illustrated brochure describes services and equipment for the aggregate industry including research, engineering and design of processing plants for aggregates, concrete and asphalt. Cindaco, Inc. 404

Asphalt plant

Asphalt plants in both stationary and portable units are explained in a four-page folder. White Mfg. Co. 405

Hydraulic dredges

A line of hydraulic dredge pumps, chain cutter ladders, rotary cutter ladders and sectional-steel hulls, is described in an eight-page bulletin. Meckum Engineering, Inc. 406

Cranes

A four-page folder describes top running, single bridge, hand traveling cranes, available in capacities of 1 to 10 tons, and in spans up to 50 ft in length. American Chain & Cable Co., Inc. 407

Hydraulic cranes

Five models of hydraulic cranes with capacities up to 11 tons are illustrated and described in a four-page folder. Austin-Western. 408

Crawler crane excavator

47-ton crane is described and illustrated in use as a 2 yd. shovel, crane, dragline, clamshell and hoe in a 12-page booklet. The Thew Shovel Co. 409

Crawler crane excavator

Specifications, construction details, dimensions and lifting capacities for the ½-yd. Type K crawler are listed in a 12-page booklet. Insley Manufacturing Corp. 410

Crawler crane excavator

The key feature of the 330 Sprawler, a crawler with outriggers, are described in a six-page folder. Koehring Co. 411

Buckets

A 32-page catalog shows all types and sizes of Williams clamshell and dragline buckets and stone grabs. Complete specifications are included for each type of bucket. Wellman Engineering Co. 412

Tractor shovels

Largest two of the Michigan Tractor Shovels are pictured in a 16-page booklet. Included are general specifications and measurements. Clark Equipment Co. 413

Tractor shovels

The power, speed and handling characteristrics of six Michigan Tractor Shovels are covered. Contains drawings, photographs and a table. Clark Equipment Co. 414

Wheeled tractor

A four-page folder includes pictures, drawings, specifications and dimensions for the Big Mo 500 Industrial Wheeler equipped with gasoline or diesel engine. Minneapolis Moline. 415

Crawler tractor

A 24-page booklet of on-the-job photographs illustrates the many uses for the Euclid C-6 crawler tractor. Euclid Div. of General Motors. 416

Crawler tractor

Bulletin gives specifications, working ranges, dimensions and weights for the MoTrac Crawler-Loader. Minneapolis Moline. 417

Crawler tractor

Principal features of the TD-25 with either torque converter or gear drive are presented in a 24-page illustrated booklet. Includes photographs and both schematic and cut-away drawings. International Harvester Co. 418

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Equipment line

The full line of Caterpillar construction equipment is pictured in a 20-page catalog. Included are dimensions and brief specifications for motor graders, tractors, Traxcavators, bulldozers, scrapers, rippers, pipe-layers, wheel tractors and engines. Caterpillar Tractor Co. 419

Utility tractors

The versatility of the A-C Utility Tractors is shown in a 12-page booklet which pictures the machines being used as mowers, front-end loaders, fork lifts, backhoes and sweepers. Available attachments and implements for this line are also listed. Allis-Chalmers. 420

Ripper

The "Brute" ripper for use with the International TD-25 crawler tractor is pictured in a two-page flyer. The Greenville Steel Car. Co. 421

Rollers

Construction and operating features of Galion tandem rollers ranging in size from 5 to 14 tons are illustrated in an eight-page folder. Galion Iron Works 422

Wheel ditchers

Applications of wheel ditchers are shown in a four-page, two-color folder. Barber-Greene. 423

Grader blade

The advantages of Swedish steel cutting edges for grader blades are explained in a 10-page illustrated booklet. The Uddeholm Co. 424

Finisher-float

Operational details of the Rex combination finisher-float for concrete surface finishing are presented. Chain Belt Co. 425

Curb machines

Two automatic curb laying machines that will work with either asphaltic or portland cement concrete are illustrated in a four-page folder. General specifications for units are included as are cross-sectional drawings of ten available curb shapes. Power Curbers, Inc. 426

Earth augers

Specifications are given for two models of earth augers ranging in diameter from 18 in. to 96 in. in a four-page folder. Available cutting tooth arrangements are pictured. Northwest Welding & Blacksmith Co., Inc. 427

Core drill

Capacity and specifications for truck mounted core drill are given in a two-page flier. Components are also described. Acker Drill Co. 428

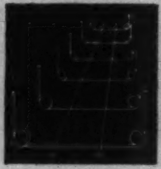
"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB

STEEL and WIRE ACCESSORIES for Fast

FIREPROOFING

of Structural Steel



RIGID BEAM CLIP

5′ lengths — installed with lightning speed. Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER

for beams over 16″ deep. Made of #10 or #12 gauge galvanized wire.

★

TOGGLE HANGERS

More rigid than any wire. Used in conjunction with

SYLGAB SNAP-ON HAIRPIN CLIP

to tie main and cross furring together.

★

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

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Ease of Installation

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79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Concrete mixer

Tilting concrete mixers of 2 to 7½ cu yd capacities are described and pictured in a four-page brochure. Koehring-Johnson. 429

Transit mix trucks

A 36-page booklet lists mixer body specifications by major make and shows how individual units can be matched with Ford trucks. Also describes various types of concrete mixer bodies, separate engine mixer drives and power take-off mixer drives. Ford Motor Co. 430

Trucks

Specifications, construction details and uses of trucks ranging from ½-ton to 2-ton capacity are presented in an eight-page illustrated booklet. Studebaker Packard Corp. 431

Aluminum truck bodies

Increased payloads through the use of aluminum truck and trailer bodies are explained in a six-page folder. Daybrook Hydraulic Div., Young Spring and Wire Corp. 432

Tank trailers

A 24-page catalog covers entire line of carriers for liquid and dry bulk materials. Units of steel or aluminum with capacities from 6,200 to 10,000 gallons are pictured. Fruehauf Trailer Co. 433

Tandem trucks and trailers

A full line of Ford tandem trucks and trailers is described in an eight-page booklet. General specifications are given, and components are pictured. Ford Motor Co. 434

Carpullers

Moving of rolling loads by means of a carpuller is described in 20-page booklet. Gives details on determining carpuller requirements, notes special carpullers plus carpuller accessories. Superior-Lidgerwood-Mundy Corp. 435

Tractor shovel attachment

A six-page catalog describes the Allen shovel line and illustrates how a standard fork lift truck can be changed to a front-end loader in a matter of minutes. Allen Industrial Products, Inc. 436

Gas engine

Specific details, cut-away drawings and power unit specifications for 39-hp gasoline engine are included in an eight-page booklet. Allis-Chalmers. 437

Engines

The key points in economical and efficient engine design are described in a 28-page booklet entitled, "Judging Engine Quality." Caterpillar Tractor Co. 438

Diesel engines

Trade name, description and model numbers of more than 2,200 machines powered by General Motors diesels are listed in an 82-page booklet. Engine model number for each unit described is also given. General Motors Corp. 439

Gas engine

Bulletin introduces Clark 2-cycle V-type gas engines with 4000, 4800, 6400 bhp for heavy industrial applications. 28 pages. Clark Bros. Co. 440

Power steering

Tables, charts, graphs and pictures in an 18-page booklet tell the story of a complete line of power steering components. Vickers Inc. 441

Speed reducers

A 64-page bulletin contains photographs, drawings and tables that show uses on Dodge torque-arm, shaft-mounted or flange-mounted speed reducers. Recommended drives for various reducers are listed and Dodge screw conveyor drives are included. Dodge Co. 442

Reduction gears

Gear motors and separate motor reducers are explained and pictured in an eight-page bulletin. Sterling Electric Motor Co. 443

Fluid couplings

Tables, graphs, cut-away drawings and photographs are contained in 6-page folder. Supplements 1 and 2 give specifications, construction details and applications for fluid couplings for engines and motors ranging from ¾ to 850 hp. Twin Disc Clutch Co. 444

Drilling equipment

A 28-page bulletin pictures and gives detailed specifications for a complete line of diamond bits, core barrels, rotary rock bits and drag-type bits. Recommended use of each piece of equipment is given. Acker Drill Co. 445

Rock bits

Tungsten carbide rock bits for use with either bottom or shoulder drive or taper sockets are illustrated and explained. Joy Mfg. Co. 446

Concrete vibrators

Two-page flier gives pictures and specifications for a motor-in-head, high cycle concrete vibrator that can be used with 115 or 230 volt 180-cycle generators. Dart Mfg. Co. 447

Concrete vibrators

A six-page folder gives details of flexible shaft, motor in head and high cycle concrete vibrators. Specifications included. Champion Mfg. Co. 448

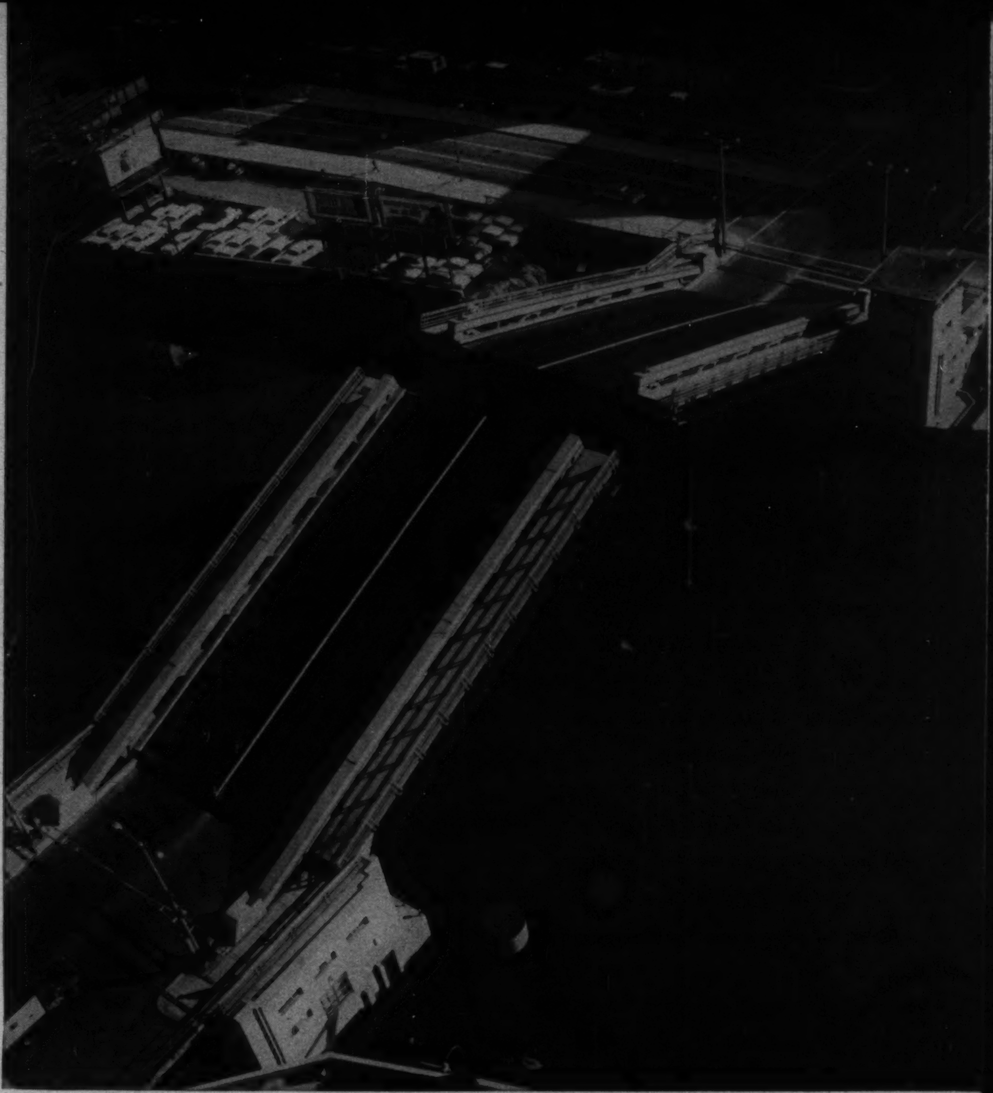
Masonry saw

Use of a masonry saw that can rip a 16 in. block in making a single pass is illustrated in a six-page folder. The manufacturer's line of auxiliary equipment and diamond blades is also included. Felker Mfg. Co. 449

New Chicago movable bridge first with Westinghouse a-c static control

YOU CAN BE SURE...IF IT'S **Westinghouse**

COVER PHOTO: View at West Van Buren Street Bridge, Chicago, showing leaf rack, pinion and main drive gearing operated by Westinghouse Bridg-O-Matic control to raise and lower east leaf of bridge.



Double leaf, trunnion bascule bridge opening for Chicago River traffic. One man in operator's room, East Pier, upper right, controls the bridge by means of an all a-c system employing Westinghouse saturable reactor-type controller.

J-94132-2

W. C. Carl, Construction Engineer, Westinghouse (standing), discusses Bridg-O-Matic drive with Stephen J. Michuda, Chief Bridge Engineer, City of Chicago, at right, and his staff (left to right): S. Frayer, Structural Engineer; M. D. Krausman, Assistant Chief Bridge Engineer; and R. H. Keil, Electrical Engineer, Bridge Division.

Stephen J. Michuda; M. B. Trimble, Construction Sales Engineer, Westinghouse; and William G. Divane, President, Divane Brothers Electric Company, Electrical Contractors, discuss main control desk which centralizes operation of leaf and auxiliary drives and selection of east and west incoming service feeders. Instruments on sloped panel indicate leaf position and electrical circuit conditions.

View of switchboard room showing incoming line switching equipment, magnetic control for auxiliary drives, Bridg-O-Matic wound rotor motor control panels and saturable reactor cubicles. Robert E. O'Brien, Chief Electrician, examines panel containing emergency control switching equipment at far end of room.

Westinghouse Bridg-O-Matic Control specified to operate Chicago's West Van Buren Street Bridge

An important factor in the design of the West Van Buren Street movable bridge in Chicago was the selection of the most efficient drive and control system available. Westinghouse Bridg-O-Matic* control was specified after a study of its advantages over other types of control.

The West Van Buren Street Bridge is a double leaf, trunnion bascule bridge across the south branch of the Chicago River and is designed to carry vehicular and pedestrian loads. Each bridge leaf is normally operated by two 100-hp a-c wound rotor induction motors. For emergency operation, a single motor per leaf may be used. During normal operation, the time required to open or close the bridge is approximately 55 seconds. Four electrically operated thrustor brakes are provided for holding each leaf in the desired position. Minimum brake shoe lining wear is encountered since the leaves are normally retarded by the motors through the action of the static reactor/Magamp controller to a low speed before the brakes are caused to set.

The normal control of the two operating motors for each leaf, connected for parallel operation, is by means of the Bridg-O-Matic control (a-c reactor control system). The speed torque performance of this system provides precision operation under all conditions of leaf load from normal to a 10-lb wind, without the use of any "mechanical" braking, for positive slowdown and reduced speed operation.

Electric power, supplied by two independent networks, is three phase, four wire, 60 cycle at 208/120 volts, stepped up at the bridge through transformers to 480 volts.

An alternate control system may be selected by moving the control selector switch from "Reactor" to "Off." This provides the conventional reversing wound rotor controller with six power points and a drift point. Either motor may be used. *(contd.)*

YOU CAN BE SURE...IF IT'S

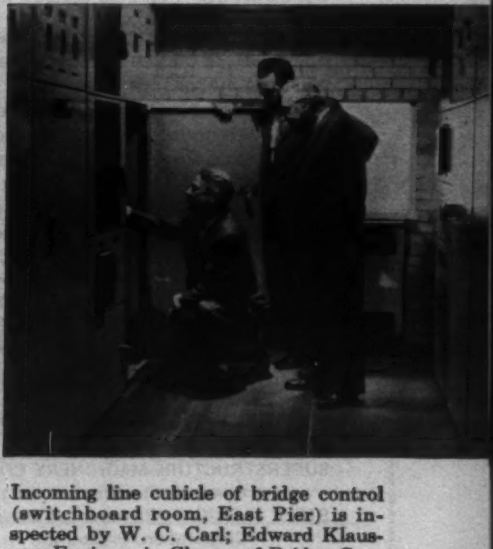
Westinghouse

*Trade-Mark

J-94132-3

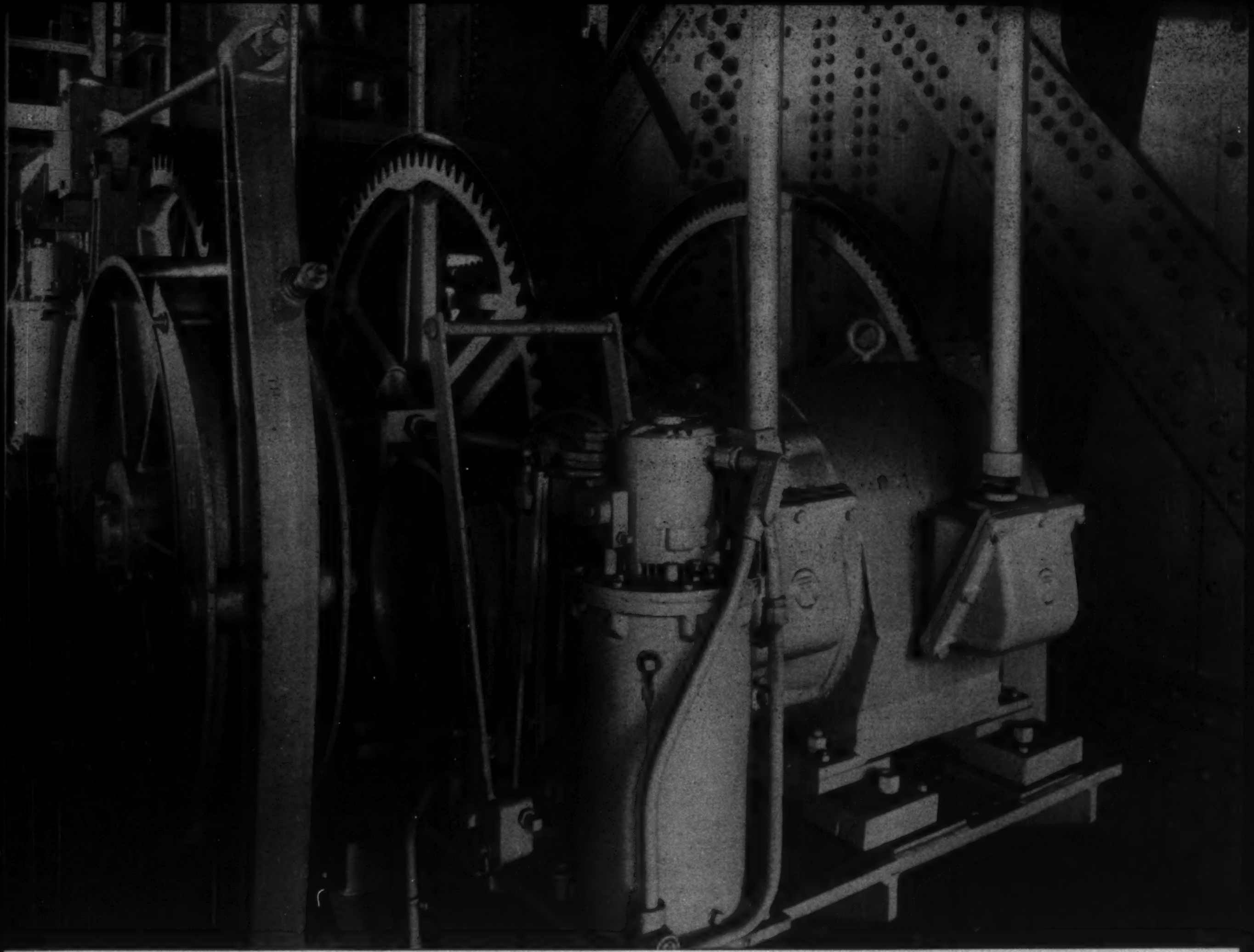
L. A. Johnson, Westinghouse Sales Engineer; E. A. Leske, Electrical Engineer, Divane Brothers Electric Company; and R. H. Keil inspect Westinghouse Magamp control section of bridge switchboard.

Chief Electrician, Robert E. O'Brien, checks cubicles which house Westinghouse primary saturable reactors.



Incoming line cubicle of bridge control (switchboard room, East Pier) is inspected by W. C. Carl; Edward Klausner, Engineer in Charge of Bridge Construction; and R. H. Keil.

CIRCLE 195 ON READER SERVICE CARD



Westinghouse Bridg-O-Matic operates Van Buren Street Bridge (contd.)

Interlocks are provided in the control system to prevent operation of leaves until all flashers, traffic lights, gongs and warning horns are operating, traffic gates are down, and bridge centerlocks are withdrawn.

Westinghouse saturable reactor a-c systems offer many possibilities for vertical lift, bascule or swing bridge designs, and other applications such as dam and lock gates, cranes, hoists, etc. For more information call your Westinghouse electrical construction engineer, or write: Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa. J-94132-4

OWNER & DESIGNER: City of Chicago, Ill.
Department of Public Works, Bureau of Engineering
Division of Bridges and Viaducts

CONSULTING ENGINEER: Hazelet & Erdal, Louisville, Ky., and Chicago, Ill.

ELECTRICAL CONTRACTOR: Divane Brothers Electric Company, Chicago, Ill.

SUPERSTRUCTURE-MACHINERY CONTRACTOR:
Overland Construction Company, Chicago, Ill.

STEEL FABRICATOR: American Bridge Division, United States Steel Corporation, Pittsburgh, Pa.

YOU CAN BE SURE...IF IT'S Westinghouse

TUNE IN WESTINGHOUSE-CBS TV-RADIO COVERAGE, PRESIDENTIAL CONVENTIONS, JULY 10-29

View showing one of leaf drives (there are two per leaf), each with Westinghouse 100-hp a-c wound rotor motor and a-c thrustor-operated motor and machinery brakes.

John A. Machiels, Bridge Maintenance Machinist, looks at the 225-kva Westinghouse Inerteen®-filled step-up transformer which provides 480-volt supply for bridge drive motors and auxiliaries. Type DB-50 wall-mounted circuit breaker provides main feeder protection.

Building Materials

Curtain wall

A 16mm, sound and color film describes applications and installation of light-weight Cemesto structural insulating panels. The Celotex Corp. 450

Stainless steel

Booklet describes commercial and industrial building applications of stainless steel for siding, frames and hardware together with sample specifications. 50 pages. Allegheny Ludlum Steel Corp. 451

Chromium-nickel stainless steel

Booklet describes properties together with general information and technical data on chromium-nickel stainless steels to enable users to make correct design and buying decisions. 40 pages. Republic Steel Corp. 452

Colored stainless steel

Six-page folder describes line of sheet and strip stainless steel. Available in 11 colors, either high or low gloss. Describes properties, and test results on weathering. Washington Steel Corp. 453

Porcelain enamel panels

A 12-page catalog contains details and specifications of architectural percelain enamel panels, including those where embossed designs of the architect's choice are fired into the panel. Davidson Enamel Products, Inc. 454

Tapered girder

An eight-page catalog describes the Shlagro Tapered Girder. It includes load tables and structural data. Shlagro Steel Products Corp. 455

Architectural aluminum

A 24-page catalog describes and illustrates aluminum structural shapes, extruded tubing, handrails and other building products available from the warehouse. Reynolds Metals Co. 456

Solar screens

An eight-page brochure describes 12 standard grille designs for sun control, which now are available in ceramic veneer of any color. Federal Seaboard Terra Cotta Corp. 457

Louvers

Bulletin contains description, illustrations and specifications for industrial louvers. Four pages. Bowman Steel Corp. 458

Metal screens

Applications and specifications for pierced metal and slit screens are described in 12-page brochure. Gross Perforated Metals Plant, National-Standard Co. 459

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

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Send me the booklet: "How General Contractors Get More Business in New Construction" and let me see some typical Dodge Reports. I am interested in the general markets checked below.

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

Area____________________

Name____________________

Company____________________

Address____________________

City__________ Zone_____ State______

HYDRAULIC SLIPFORM SERVICE

Washington Building, Seattle

All-inclusive compact jacking unit

Water Tower, Tyler, Texas

Hon. Mercier Bridge, Montreal

You build the form, "Concretor" equipment raises it automatically. Adaptable to all types of vertical construction. On-the-job engineers available. Send for job studies.

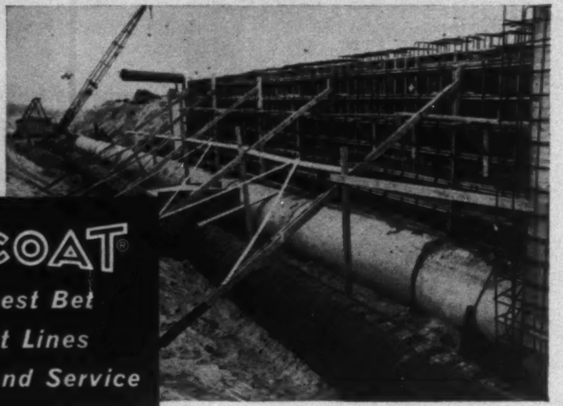
Soya Beans Storage, Decatur, Ind.

B. M. HEEDE, INC. 30-01 37th Ave., Long Island City 1, N. Y.

In San Francisco: 630 Sixth St. In Montreal, Can.: 625 Faillon St.

CIRCLE 39 ON READER SERVICE CARD

NO PLACE TO GAMBLE


Joints on steel plant water line are TAPECOATED to provide protection equivalent to coating on the pipe.

TAPECOAT®

is Your Best Bet to Protect Lines in Underground Service

You take no chances when you specify TAPECOAT coal tar coating in handy tape form for pipe, pipe joints, fittings, couplings, tanks, tie rods, and conduit on new construction or for maintenance.

Since 1941, TAPECOAT has proved its superiority in resisting moisture, acids, alkalis, and other severe corrosive and abrasive conditions.

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths. It is easy to apply with the use of a torch to bleed the coating which serves as both bond and protection. No skilled help required.

A TAPECOAT sales and service engineer is ready to help you on any corrosion problem. Write for details today.

Originators of Coal Tar Coating in Tape Form

The TAPECOAT *Company* *1551 Lyons Street, Evanston, Ill.*

Representatives in Principal Cities

Manufactured and distributed in Canada by The Tapecoat Company of Canada, Ltd.
25 Haas Road, Rexdale, Ontario

CIRCLE 198 ON READER SERVICE CARD

For More information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Metal gratings

Catalog provides data and specification for a variety of floor and deck gratings. Illustrations and tables of both standard and heavy-duty types. 20 pages. Klemp Metal Grating Corp. **460**

Terne roofing

Seamless sheet steel coated with a lead-tin alloy for corrosion resistance, is described in a four-page bulletin. It also contains specifications. Lead Industries Association. **461**

Protective coatings

A 13-page booklet describes coal-tar protective coatings especially suitable for application to steel and concrete structures located underground or underwater. Allied Chemical Corp. **462**

Precast, prestressed concrete

Elements for industrial and commercial buildings described and illustrated in a 12-page brochure with description of production and erection. American-Marietta Co. **463**

Precast wall panels

A 32-page booklet illustrates the use of precast concrete curtain walls on major structures around the nation. It also contains spandrel-wall sections showing connection and caulking details. Portland Cement Association. **464**

Prestressed roof deck

Eight-page brochure gives technical data about prestressed, single stem roof deck that can be used for schools, churches, large buildings and homes. Flexforms, Inc. **465**

Cement wall surfacing

Installation procedure and condensed specifications for interior and exterior application of colored wall surfacing material. Eight-page catalog. Cement Enamel Development, Inc. **466**

Water-tight concrete

Summary of information on the design and specification of water-tight concrete given in a six-page folder. Describes basic requirements and how Pozzolith should be specified for durable water-tight concrete. The Master Builders Co. **467**

Concrete floor treatment

A four-page catalog describes the curing, sealing, hardening and dustproofing of concrete floors with Clear Seal. A. C. Horn Company. **468**

Masonry mortar

Catalog illustrates and describes testing, mixing and field use of mortar made from Atlas Masonry Cement. United States Steel Corporation. **469**

The guard rail held because it's steel

Steel guard rail is made *and tested* for a wide margin of safety. When this heavyweight plowed into the Bethlehem guard rail along the Southeast Expressway near Boston, the rail held and prevented the truck from rolling down a bank onto a highway below. Thanks to the strength of steel, this accident was not as tragic as it might have been.

Galvanized Rail Cuts Maintenance

Today Bethlehem steel guard rail comes galvanized. The protective coating holds maintenance to a minimum, and gives many years of service.

High Strength for Maximum Protection

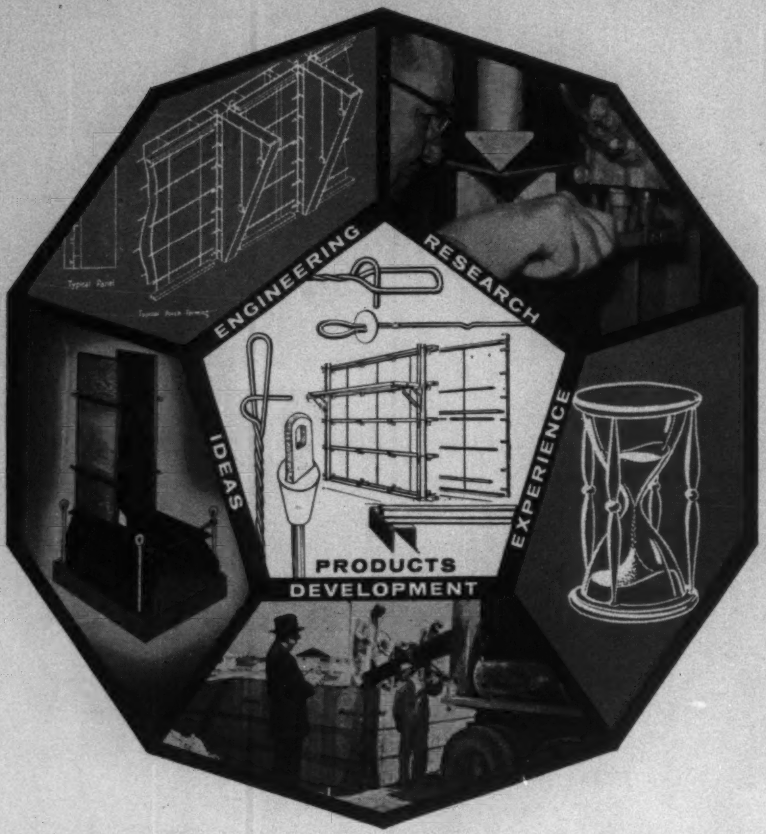
Bethlehem beam guard rail has the ideal combination of high strength and low maintenance. That's why Bethlehem steel guard rail protects literally thousands of miles of the nation's roads. Send for our free booklet that describes beam guard rails in detail. Just write to the nearest Bethlehem sales office, or direct to us at Bethlehem, Pa. Ask for Booklet 514.

for Strength
. . . Economy
. . . Eye-Appeal

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

CIRCLE 199 ON READER SERVICE CARD



Results don't "just happen" with Gates Forming

It's no accident that more and more builders are turning to Gates Forming Systems for results that can be counted at the bank.

Behind these results is Gates' unique combination of ideas, engineering, research and experience...constantly at work to develop the products and techniques that prove "right" for every type of concrete forming...large or small.

Put the PROVEN advantages of Gates Concrete Forming Systems to work for you...for results you can bank on!

USE GATES IT'S GALVANIZED

Gates & Sons, Inc.

THERE'S A GATES SYSTEM FOR EVERY FORMING NEED

80 South Galapago Street • Denver 23, Colorado

Branches in Spokane, Rochester, Calgary
Representatives in principal North American cities

• •

CONSULT OUR CATALOG IN SWEET'S 1960 ARCHITECTURAL & LIGHT CONSTRUCTION FILES, OR WRITE FOR COMPLETE INFORMATION ON GATES CONCRETE FORMING SYSTEMS & TECHNIQUES

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Masonry patching material

Thoropatch, a patching material for concrete, brick and masonry is described in a four-page folder. Strength-test results and photographs illustrating the use of Thoropatch are also included. Standard Dry Wall Products, Inc. 470

Reinforcing bars

A 12-page pamphlet lists American manufacturers of standard ASTM concrete reinforcing bars, with photographic reproductions of bars showing mill marks identifying location of mill. Concrete Reinforcing Steel Institute. 471

Wire lath

Floor, veneer, and stucco lath described in an eight-page brochure illustrating installation together with safe load table and specifications for installing Steeltex over steel and concrete joists. Masonry and stucco laths are also described. Pittsburgh Steel Co. 472

Epoxy compounds

Folder contains nine loose pages of specifications and property tabulations of Epoxy compounds for sealing joints, bonding, patching and other uses. Sika Chemical Corp. 473

Epoxy bonding agent

A 32-page handbook explains the application of Thiokol epoxy concrete adhesives which develop bonded joints stronger than the concrete itself. International Epoxy Corp. 474

Masonry bonding agent

Six-page catalog contains description, installation procedure and specifications of Hornbond, a liquid resinous emulsion bonding agent. A. C. Horn Companies. 475

Fire rated acoustical tile

The Fire Guard Acoustical System described in a 16-page folder with installation photos and tables giving hour fire protection ratings for structural steel. Roof assembly data is also included. Armstrong Cork Co. 476

Structural clay products

Structural clay products for light construction. Includes glazed and unglazed facing tile, brick, clay sewer pipe, drain tile and flue lining. Four-page bulletin. Natco Corp. 477

Industrial insulations

Properties and specifications of a complete line of heat and cold insulation for service from subzero up to 1900 F are presented in a 24-page catalog. Thermoconductivity and required thicknesses are tabulated for each product. Baldwin-Ehret-Hill, Inc. 478

A New Kind of Paper That Helps Stop Fires Before They Start

The bill is higher than ever today when fire interrupts production. That is why architects, engineers and building management think in terms of "total fireproofness". A requirement of this concept is the scrutiny of every element of construction as to its flammability.

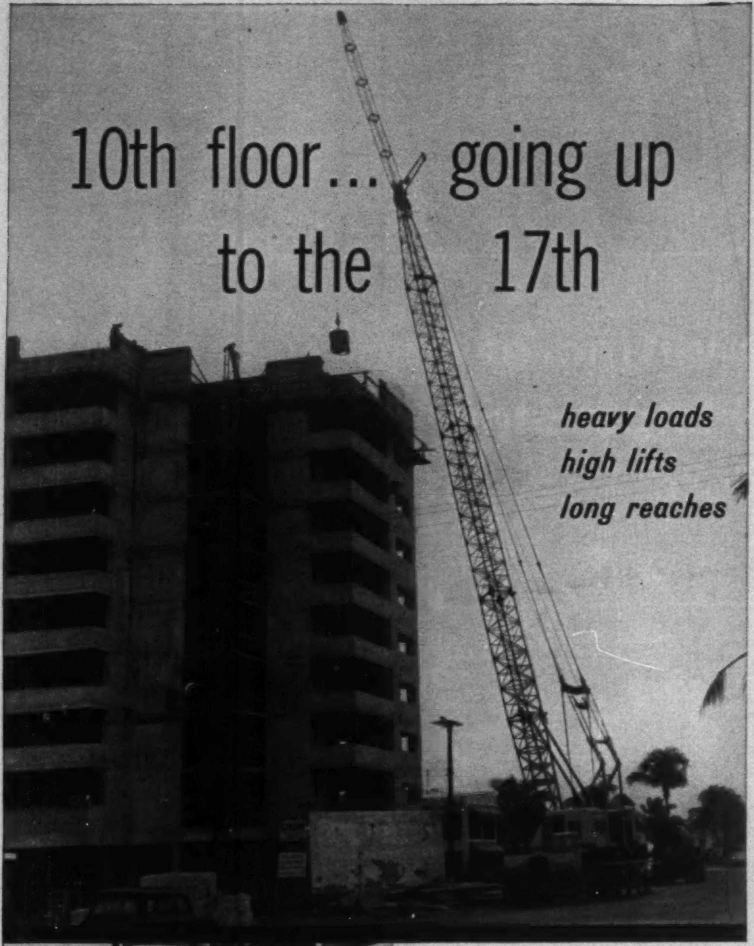
An additional contribution to "total fireproofness" has been made with the development of Pyro-Kure® vapor barriers. These U/L rated products (used in construction to eliminate condensation damage) employ paper, foil or plastic film laminations. The special adhesive used emits a gas at combustion temperature which snuffs out the flame making the product self extinguishing.

Pyro-Kure vapor barriers are unique in being *permanently* non-combustible. They have a perm rating of less than 0.1 and are being used as insulation facing, pipe jacketing and duct lining. Leading insulation manufacturers are combining them with their products. Write Dept. AS2 for technical literature and samples on this vapor barrier line.

SISALKRAFT

AMERICAN SISALKRAFT CORPORATION
Chicago 6 • New York 17 • San Francisco 5
In Canada: Murray-Brantford Ltd., Montreal

reinforced paper, foil and plastics for construction, industrial packaging and agriculture



● Building a new apartment in Fort Lauderdale, Fla., the Harrison Crane Service of Miami pours concrete and lifts materials with this Waukesha Engine powered P & H crane. Here at the 10th floor, crane has a 170-ft. boom. From here, up to the 17th floor top, boom will be 200 ft.

●

Waukeshas are standard for crane operation. This P & H crane is powered by Model 140-GK—4½ in. x 5½ in. bore and stroke; 525 cu. in. displ. Model 140 Series gasoline engines available up to 225 hp. Other models for crane or shovel installation, up to 1200 hp., Diesel or gasoline.

WAUKESHA *powered*

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES
Factories — Waukesha, Wisconsin, and Clinton, Iowa
473

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Acoustical insulation

Three types of glass fiber insulations described with specification tables and illustrations in a six-page folder. Gustin-Bacon Mfg. Co. 479

Water stops

A 24-page manual contains drawings and photographs with comparative data for rubber and plastic. Design data for both small and large movement joints together with application data for installation of Kwik-Seal water stop. The Gates Rubber Co. 480

Plastic waterstop

A polyvinylchloride waterstop for use at foundation-wall joints, at floor-wall joints and with expansion joints in roofs. Four-page illustrated leaflet. Waljohn Waterstop, Inc. 481

Asphalt wearing surface

A four-page booklet describing Flintmastic, a surface coating for industrial floors. Describes application to worn and uneven floors, both wood and concrete for a level, wear and water resistant surface. Industrial Products Div., The Flintkote Co. 482

Road surfacing mix

Gives instructions for use of Tarmac in seven different paving situations, ranging from parking lots to super-highways. Koppers Co., Inc. 483

Airport runways

The advantages of using Pozzolith in the construction of jet runways are explained in a 20-page publication. Master Builders. 484

Asphalt covering

A protective coating for asphalt pavements available in green, gray and red is explained and illustrated in a four-page folder. Light reflection and absorbtion charts given. Maintenance, Inc. 485

Protective coatings

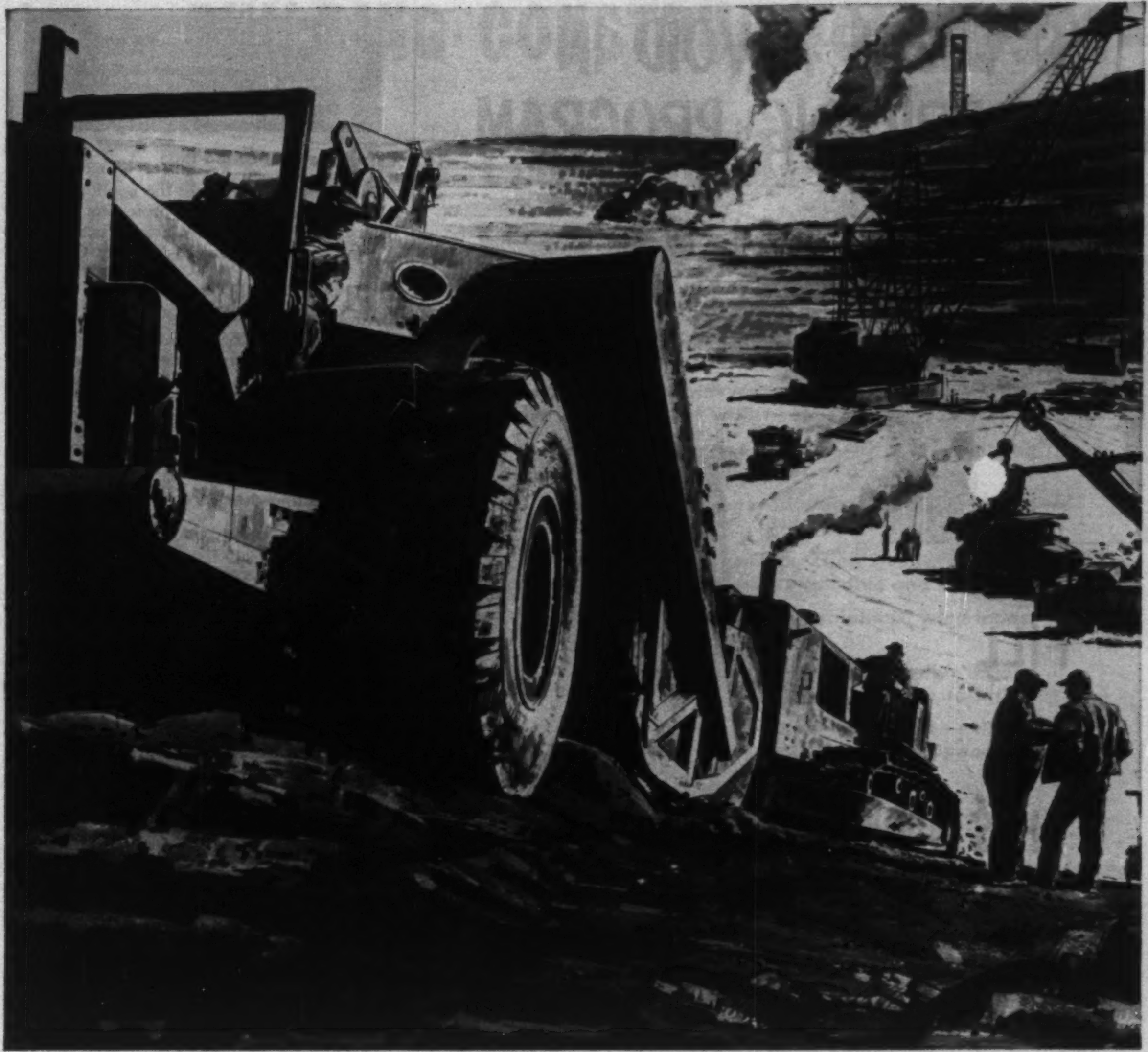
Twelve page booklet describes tar base bitumastic coatings for a wide range of applications together with specifications, properties and directions for use. Koppers Co., Inc. 486

Road base stabilization

Explains the use of calcium chloride for the stabilization of base and wearing courses in road construction. Calcium Chloride Institute. 487

Anti-skid agent

A synthetic latex abrasive compound for anti-skid floors, stair treads, sidewalks, highways and airstrip pavements is described in a four-page folder. The Carborundum Co. 488



PAYLOAD . . . tons at a gulp on Bower Roller Bearings

They call it strip mining . . . where payload is king and "don't spare the rig". Take this scraper: aided by a rugged 'dozer, it's pushloaded in mere minutes. Then, with tons of rock and earth on its back, it takes off cross-country . . . dumps the load . . . hustles back for more.

Bruising bouts like this often go on 24 hours a day, put an incredible strain on equipment *and on bearings*. Yet today's bearings—*particularly those by Bower*—more than meet the task. Their basic design advantages, coupled with fine materials and precision manufacturing, have earned them a reputation for long service under the most severe conditions. And with rarely a shutdown for maintenance.

If you produce a product that uses bearings, specify Bower. You will find this extra measure of service in the full Bower line of tapered, cylindrical and journal roller bearings for every field of transportation and industry. Bower Roller Bearing Division, Detroit 14, Michigan.

BOWER
ROLLER BEARINGS

tapered
cylindrical
journal

DIVISION OF
FEDERAL-MOGUL-BOWER
BEARINGS, INC.

CIRCLE 203 ON READER SERVICE CARD

IS THERE A VOID IN YOUR DRILLING PROGRAM

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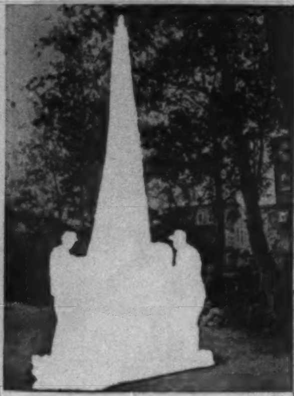
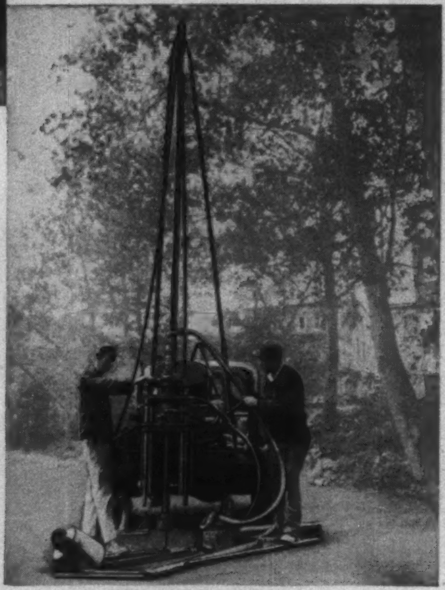




FILL IN THIS VOID

WITH STURDY . . . DEPENDABLE . . . SPRAGUE & HENWOOD EQUIPMENT

Many progressive and successful firms throughout the United States and in foreign countries want and use no other core drilling equipment except Sprague & Henwood's. They have found it to be rugged . . . easy to use . . . versatile. Are you having trouble? You might just have the wrong equipment. Why not write to Sprague & Henwood today and describe your present drilling conditions, or the drilling conditions you expect to encounter. Sprague & Henwood will supply you with equipment and complete drilling information, enabling you to go far toward filling the void in your drilling program.

Look for our emblem... It's your Seal of Quality

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.
MEMBER OF: DIAMOND CORE DRILL MANUFACTURERS ASSOC.

New York • Philadelphia • Atlanta • Pittsburgh • Grand Junction, Colo. • Buchans, Nfld.
Export Division: Sprague & Henwood International Corporation, 11 W. 42nd St., New York, N.Y.

CIRCLE 204 ON READER SERVICE CARD

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Concrete joint curing tape

Describes and illustrates the application of ConSeal for curing and protecting freshly cut or formed concrete joints. Four pages. Presstite Div., American-Marietta Co. **489**

Joint sealer

Advantages of a Presstite joint sealer made especially for jet airfield pavements are listed in a four-page folder. Presstite. **490**

Aluminum bridge railings

A complete file of detail drawings of aluminum bridge railings and accessories is available. Reynolds Metals Co. **491**

Hand railing designs

Standards compiled in a 12-page catalog guide designers in the selection of tubular railing components. Minimum bend radii, standard offsets, returns, mounting clips and brackets all detailed for easy reference. Tubular Products, Inc. **492**

Road marking

The use of an extruded vinyl strip as a permanent marker is explained in a brochure. Trafficaide Corp. **493**

Road striping

The advantages of thermoplastic Perma-Line in the striping of safety or traffic lanes explained in a 16-page booklet. Veon Chemical. **494**

Marine products

Marine construction products for harbors, locks, docks, dams and marinas are featured in eight-page booklet. Photos and scale drawings illustrate channel wales, tie rods and anchor bolts, hand railings, cat walks and piling supports. Commercial Shearing & Stamping Co. **495**

Marine construction products

An eight-page catalog lists the marine construction products available from L. B. Foster Co. **496**

Fire-retardent paints

How fire-retardent paint works and how it can be applied to various types of structures is the subject of a 12-page bulletin. Material and labor costs are included. Albi Manufacturing Co. **497**

Pile tips

FSI pile tips designed to prevent hung-up piles, collapse and distortion, bending or doglegging illustrated in a four-page brochure. Foundation Specialties, Inc. **498**

Heavy milled nuts

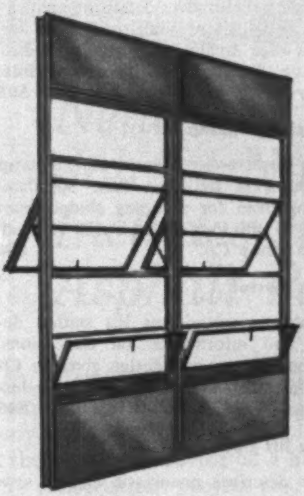
Describes complete line of heavy semi-finished and finished hexagon nuts milled from bar stock with tables for specification and purchase of nuts for heavy machinery and construction industries. Seven pages. Acimet Mfg. Co. **499**

lower BUILDING CONSTRUCTION COSTS–

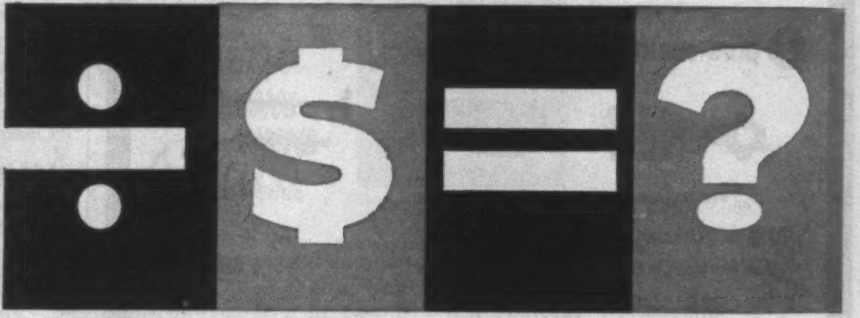
What does that really mean?

In windows or curtain-walls, it's not just the initial price, but the ultimate over-all costs that must be considered. A quality product is a real economy, eliminating a multitude of hidden expenditures that can be avoided — from the design stage to years of satisfaction and minimum maintenance use. That's why — for lowest building costs — it pays to consult with Bayley and gain these benefits:

- **Ten pre-engineered Curtain-Wall designs, from which you can achieve individualized wall treatments.**
- **Experienced engineering cooperation with your building Designers to avoid drawing revisions and delays.**
- **Elimination of the need for expensive custom designing and fabrication.**
- **Designs that prevent leakage with scientifically positioned weeps and proved sealants in fabrication and erection.**
- **Provisions for masonry and structural variations, wind loads, and building contraction and expansion.**
- **Dependability of a recognized, financially responsible organization with complete manufacturing and erection facilities.**
- **Dealings with a company known for recognizing their client-responsibility from a building's inception to its occupancy.**



— and above all, ***A Quality Product!***



If you seek lowest ultimate building construction cost, write or call. The nearest Bayley Representative will be glad to cooperate with you.

BAYLEY

Windows and Curtain-Wall Systems

The WILLIAM BAYLEY Co.
Springfield, Ohio
Agents in All Principal Cities

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FAirfax 5-7301

District Sales Offices:

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MUrray Hill 5-6180

CHICAGO 2, ILL.
105 W. MADISON ST.
RAndolph 6-5997

WASHINGTON 5, D. C.
1426 "G" ST., N.W.
STerling 3-3175

ORIGINATORS • DESIGNERS • MANUFACTURERS • INSTALLERS

WHY SHOULDN'T YOU POCKET THESE SCHRAMM COMPRESSOR SAVINGS TOO!

① savings when you buy

$4,720 $4,950 $6,405

Schramm 125 Portable other 125 cfm compressors

from $ 230 to $ 1,685 less

② followed by savings in

fuel — you use up to 50% less

full 125 cfm of air — 15% more power

extra efficiency — operate more tools

③ plus maintenance savings on

wearing parts — 90% interchangeable between engine and compressor

replacement stocks — fewer needed

parts prices — up to 85% less

IT'S AS SIMPLE AS THIS:

Schramm piston-type design cuts manufacturing costs; permits rugged, power-packed compressors that deliver full rated air capacity at rock-bottom initial cost. With today's cost squeeze, no contractor can afford to shell out when he buys a compressor ... or during all the years that he uses it.

Write for bulletin. Or see your nearest Schramm dealer listed in the Yellow Pages.

Schramm AIR COMPRESSORS

620 North Garfield Ave., West Chester, Pa.

Schramm, Inc., manufacturers of Rotadrills (Pneumatractor Mounted, Truck Mounted, Crawler Mounted), Air Compressors (Portable, Stationary), Self-propelled Air Compressors (Pneumatractors) and Booster Compressors

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Bolts

Basic dimensions, grip lengths, and advantages of using high strength bolts are given in an eight-page booklet; also tips on torquing and recommended bolt tension for calibrating wrenches. U. S. Steel Supply Division, U. S. Steel Corp. **500**

Installed Equipment

Reservoirs, standpipes

Bulletin describes steel reservoirs and standpipes in municipal and private water systems. Includes specifications, standard capacities and maintenance recommendations. Chicago Bridge & Iron Co. **501**

Elevated water tanks

"Tanks that Advertise" is a 4-page brochure describing special water storage tanks built as king size replicas of the customer's product. The brochure gives illustrations of steel structures which combine efficient water storage and sales promotion. Chicago Bridge & Iron Co. **502**

Sludge collectors

Eight-page bulletin gives details on applications of two lines of sludge collectors for either sewage treatment plants or industrial-waste installations. Yeomans Bros. Co. **503**

Rotary sludge pump

A rotary positive-displacement sludge pump is described in four-page flier. Specifications are given for pumping sludge from 75 gpm to 400 gpm up to a 120 ft head. Chicago Pump Co. **504**

Sewage ejector

Pneumatic sewage-ejector lift station described and information on dimensions, motor horsepower and design given in 12-page illustrated booklet. Schmieg Industries, Inc. **505**

Sewage lift station

Bulletin describes pneumatic ejector sewage lift station recommended for use when rated capacity is below 100 gpm. Diagram gives major mechanical and electrical features. Smith and Loveless. **506**

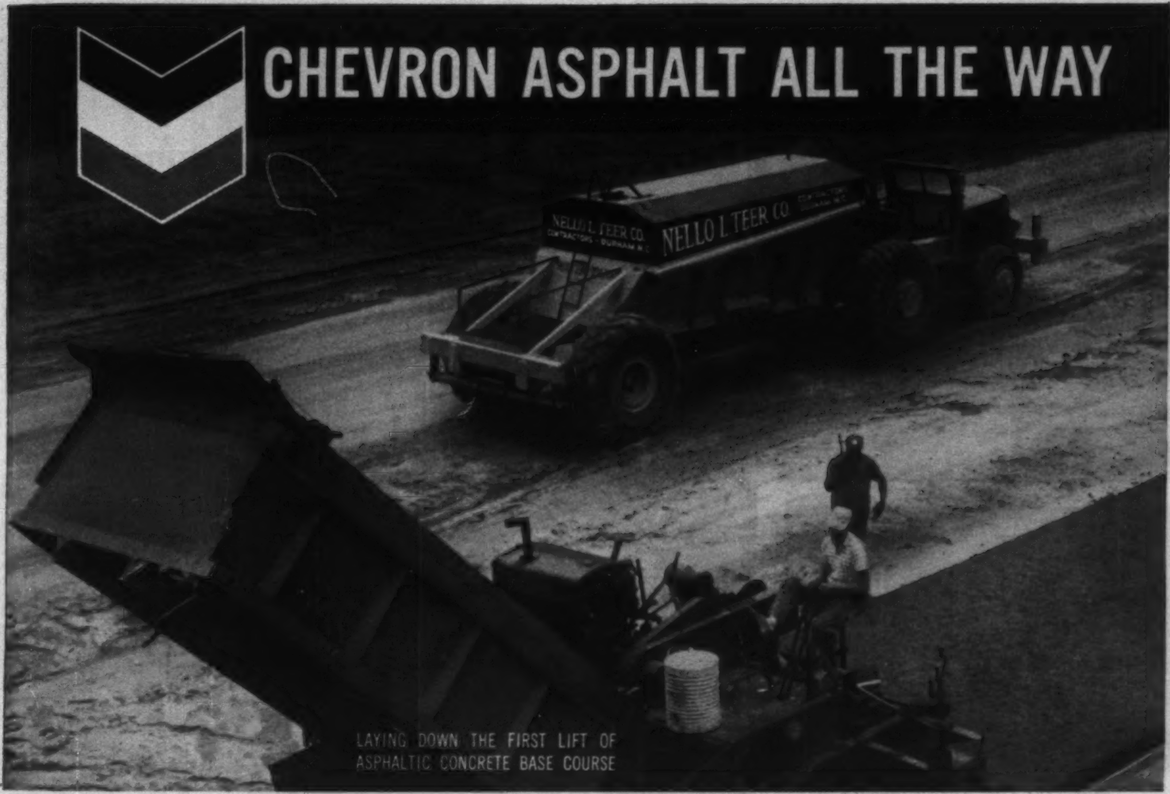
Rotary distributors

Rotary distributors for trickling filters up to 200 ft in diameter are described in 12-page bulletin. Drawings, dimensions and specifications for 6-in. to 24-in. columns. Yeomans Bros. Co. **507**

Evaporators

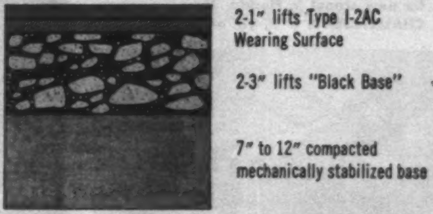
Evaporators—both single and multiple effect—are described in a 28-page bulletin covering design and function of types of units used in evaporation of solvents and concentration of chemical solutions. Chicago Bridge & Iron Co. **508**

CHEVRON ASPHALT ALL THE WAY



LAYING DOWN THE FIRST LIFT OF ASPHALTIC CONCRETE BASE COURSE

Nello L. Teer Company Job In North Carolina Includes Record Asphalt Paving Award


2-1" lifts Type I-2AC Wearing Surface
2-3" lifts "Black Base"
7" to 12" compacted mechanically stabilized base

CROSS SECTION VIEW OF PAVEMENT CONSTRUCTION

On Interstate Route 95, North Carolina, the Nello L. Teer Company, of Durham, North Carolina, is the prime contractor on a highway construction project that includes the largest asphalt tonnage contract ever awarded by the North Carolina Highway Dept.

This project fittingly crowns 50 years of activity in the construction field by the Teer Company.

The job called for new construction of divided pavement each side 24′ wide, south from the Harnett County line 14.55 m. to a point 5 m. north of Fayetteville.

The paving contract covered the placement and compaction of 7″ to 12″ of mechanically stabilized base; placement and compaction of Asphaltic Concrete "Black Base" course in two 3″ lifts; and placement and compaction of Type I-2 Asphaltic Concrete wearing surface in two 1″ lifts. Asphalt surface treated shoulders were provided full length over a mechanically stabilized base.

Overall, the "Black Base" and I-2 Wearing Surface required 210,000 tons of Asphaltic Concrete.

All work is being done under Project 8.13438. Sponsor: North Carolina State Highway and Public Works Commission. Resident Engineer: H. B. Smith; Division Engineer: J. W. Spruill, 6th Division, Fayetteville, N. C.

Chevron Asphalts: supplied by American Bitumuls & Asphalt Company, represented on the job by Sales Engineer George Mitchell.

Across the nation, Chevron Asphalts—backed by outstanding engineering and on-job service—are enabling Road Builders to maintain construction schedules and stretch highway dollars.

Call our office nearest you for complete information.

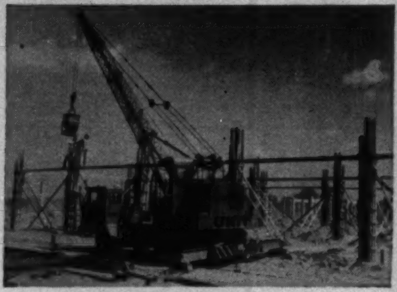
American Bitumuls & Asphalt Company

320 MARKET, SAN FRANCISCO 20, CALIF.
Perth Amboy, N. J.
Baltimore 3, Md.
Cincinnati 38, Ohio
Atlanta 8, Ga.
Mobile, Ala.
St. Louis 17, Mo.
Tucson, Ariz.
Portland 8, Ore.
Oakland 1, Calif.
Inglewood, Calif.
San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

Whatever your lifting or digging job...

MODEL 360T setting steel for chemical plant in Texas. UNIT 360T truck cranes have lifting capacities ranging up to 40 tons.

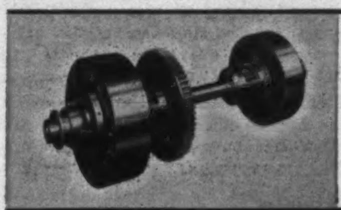


UNIT 513T CHALLENGER, carrying ½-yd. bucket, pouring concrete for new school in Florida. The CHALLENGER is a ½-yd. excavator.

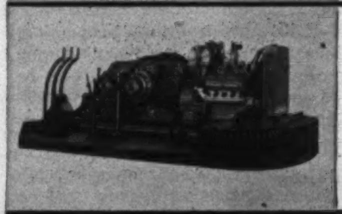
UNIT 1014 truck-mounted ⅝-yd. dragline widening and deepening creek bed in Texas. As a crane the Model 1014 is rated at 15 tons.

UNIT 1520T trench hoe digging ditch for sewer line in California. A ¾-yd. excavator, the 1520T truck crane is rated at 20 tons.

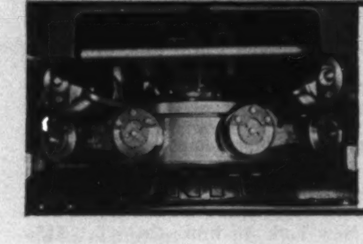
You are looking at
5 BIG REASONS why
UNIT Truck Cranes give you
More Earning Power



1. POSITIVE CONTROL FRICTIONS.
All operating clutches on a UNIT are disc type. Engaging pressure is uniformly distributed . . . loads are picked up smoothly and evenly without grabbing.

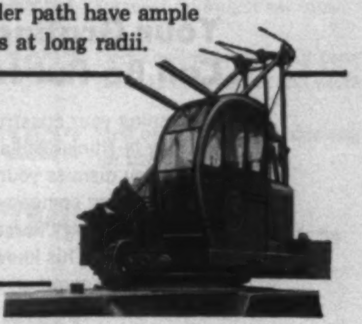


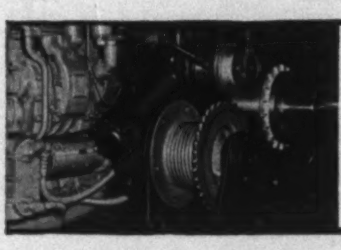
2. DIRECT IN-LINE ENGINE MOUNTING.
Engine, torque converter, and worm drive are all mounted straight-in-line with main machinery. You get ample power for heavy lifts or heaping loads . . . greater operating efficiency.



3. BALANCED WEIGHT DISTRIBUTION.
Load rollers at front and rear of turntable support weight of upper structure . . . absorb tipping strains. There is no rocking under heavy loads. Upward thrust is absorbed by self-aligning hook shoes. Large turntable gear and roller path have ample strength to accommodate maximum loads at long radii.

4. FULL VISION CAB.
Originated by UNIT and then adopted by others, this cab provides full 360° visibility in all directions to assure efficient and safe operation.





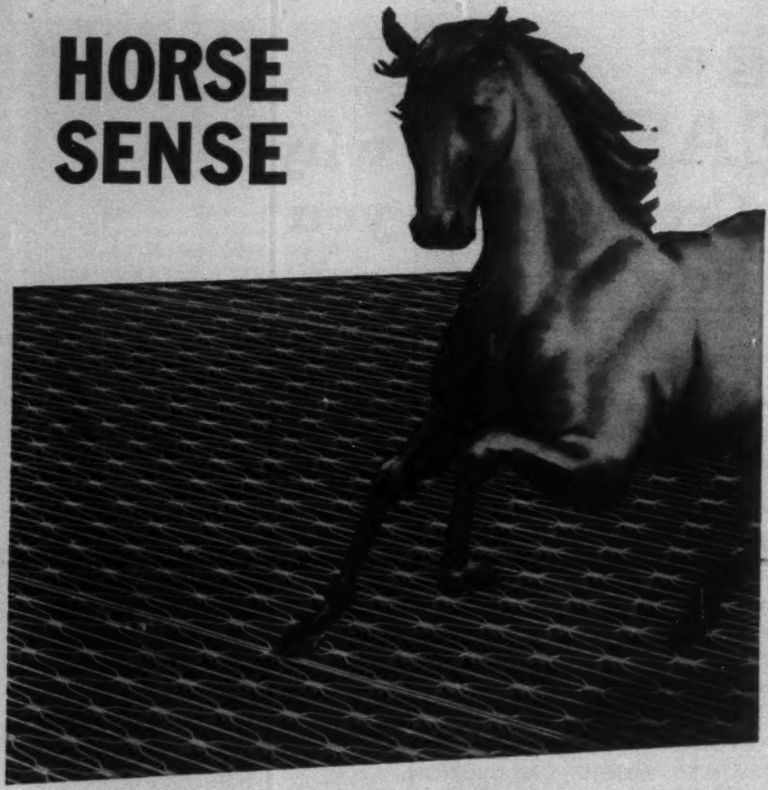
5. INDEPENDENT BOOM HOIST.
Worm type boom hoist permits power raising and controlled lowering of boom at high speeds. Equipped with safety brake, boom hoist is operated by disc clutches and is entirely independent of any other operation.

UNIT TRUCK CRANES are built in five size ranges — 10, 15, 20, 30, and 35-40 tons — and (except for Model 360T) are fully convertible. Your UNIT dealer has full information on every model — and on the famous UNIT crawler-mounted machines, too. Call him soon.

SHOVELS	HOES	CRANES	DRAGLINES
½ to ¾ YDS.	½ to ¾ YDS.	5 to 40 TONS	½ to ¾ YDS.

UNIT

UNIT CRANE & SHOVEL CORP.
6315 W. Burnham Street
Milwaukee 19, Wisconsin



HORSE SENSE

FROM IMAGINATION

Your Grating Ideas
Can Be Put to Practical Use

In planning your construction job or architectural design, you may be thinking of a novel use for open metal grating. Before you dismiss your idea as unworkable, check it with the Irving company. Irving engineers have an unusual knack for making "horse sense" from imaginative ideas about grating. This know-how is yours free. It can help you put seemingly impractical ideas to practical, economical engineering use.

No matter what feature of grating your idea stresses—drainage, strength, safety, light weight, appearance—you'll find the Irving experience helpful. Write or phone today. Let Irving help you put across your new grating ideas.

Catalog on request

IRVICO

IRVING SUBWAY
GRATING CO., Inc.

The ORIGINATORS OF THE GRATING INDUSTRY
EST. 1902

Offices and Plants at:
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 20, CALIFORNIA

CIRCLE 210 ON READER SERVICE CARD

Solids-contact reactors

Bulletin on solids-contact reactors for water clarifying and softening. Information given on chemical feeds and auxiliary equipment. 20 pages. Cochrane Corp. **509**

Electric motors

A guide to selection of the right electric motor for the proper application is given in 15-page brochure. Century Electric Co. **510**

Automatic door equipment

A 26-page catalog explains and illustrates the operation of Magic-Door hydraulic and pneumatic automatic door equipment. Stanley Hardware. **511**

Heaters

Installation of combination gas-oil burners in a Los Angeles office building is described in a four-page bulletin. Ray Burner Co. **512**

Liquid chillers

Liquid chillers which provide temperature and humidity control for manufacturing and processing described in flier. Can be used to chill water, alcohols, glycols, solvents and many other liquids. Curtis Manufacturing Co. **513**

Compressors

Flier gives specifications and special features of 15-hp and 20-hp two-stage air-cooled compressors. Curtis Mfg. Co. **514**

Pumps

Four-page bulletin illustrates various centrifugal and turbine pumps with capacities from 1 to 9,000 gpm and heads to 600 ft. Includes application, capacity and head range for each type. Aurora Pump Division, New York Air Brake Co. **515**

Rotary pumps

A line of variable capacity rotary pumps is described in eight-page bulletin including selection procedures, application data tables and performance curves. Blackmer Pump Co. **516**

Centrifugal pumps

Four page bulletin gives operating details and installation dimensions of a new line of 12 vertical-design centrifugal pumps for hot and cold water circulating and for water supply pressure booster, ranging from 50 to 600 gpm under operating heads of 30 to 110 ft. Weil Pump Co. **517**

Pumps

A pump that uses a positive displacement pumping action to literally squeeze water upward, is the subject of a newly revised bulletin. Peerless Pump, Hydrodynamics Div., Food Machinery and Chemical Corp. **518**

Self-priming pump

A self-priming centrifugal pump unit is described, which can be installed on any standard crankshaft engine. Flier gives performance data on four models. Marine Products Co. **519**

For More Information . . .

Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Nuclear piping

Facilities for the fabrication and erection of critical piping for nuclear processes as well as for manufacturing welding fittings for nuclear piping systems are described in 24-page brochure. Midwest Piping Co. 520

Steel pipe

Uses of welded steel pipe ranging from heating and plumbing to ice rinks and scaffolding are illustrated in an 18-page bulletin. Includes specifications. The National Supply Co. 521

Fiber pipe

Booklet on fiber pipe and fittings describes manufacturing process, testing, specifications, and installation. McGraw-Edison Co. 522

Concrete sewer pipe

Sixty-eight page catalog on concrete sewer and culvert pipe contains engineering information on machine-made roller, suspension, cast, reinforced-concrete-pressure, and reinforced-concrete-subaqueous pipe. Lock Joint Pipe Co. 523

Plastic sewer pipe

Advantages and descriptions of plastic sewer pipe are covered in a four-page folder. Tables are included showing weight comparisons of various sewer piping materials. Evanite Plastic Co. 524

Pipe and fittings

A line of acid resisting pipe and fittings are described in 15-page booklet with specifications. Instructions on installation are given. The Duriron Co., Inc. 525

Steel pipe fittings

Elbow, tee and reducer pipe fittings for Schedule 40 steel piping are described and illustrated. Eight pages. NIBCO, Inc. 526

Pipe fittings

Complete line of couplings, repair clamps, split repair sleeves and other water pipe fittings are illustrated in 24-page booklet. Application and installation are detailed and explained. Dresser Mfg. Div. 527

Plastic fittings

Description given of polyvinylchloride fittings, flanges and valves in a 23-page booklet. Includes installation information, operating pressures, physical properties, and chemical resistance of the material. Tube Turns Plastics, Inc. 528

Pipe repair clamp

Leak-repair clamps for gas, oil, water and steam pipe are described in leaflet giving sizes and costs. Adams Pipe Repair Products. 529

Pipe insulation

Properties of Gem-Foam, a low-temperature pipe insulation for service between absolute zero and 250 F, are given in four-page brochure. "Gemfil," a foam-in-place polyurethane insulation for use on flanges, valves and fittings is also described. Baldwin-Ehret-Hill, Inc. 530

Gate valves

Brochure describes a line of gate valves for noncritical applications. Includes parts description and special features. Nibco Inc. 531

Sprinkler valves

Catalog gives complete operating data, specifications and suggestions for use of 16 different underground sprinkler heads. Discharge and pressure tables included. Rain Jet Corp. 532

Control valves

An illustrated semitechnical bulletin on control valves makes it easy to find control valve types for specific product and application problems. Ralph N. Brodie Co. 533

Valves

A line of pneumatically actuated Saunders valves are described in illustrated eight-page booklet giving construction details, operating characteristics and specifications. Conoflow Corp. 534

Pressure regulators

Information on a complete line of sliding gate pressure regulators is given in eight-page catalog. Details noted of self-operated, pilot-operated solenoid-operated and back-pressure regulators. OPW-Jordan Corp. 535

Flow tube

A flow tube for special requirements in the metering of petroleum, chemicals, gases, steam and other process fluids at low or high pressures and temperatures is subject of four-page folder. B-I-F Industries, Inc. 536

Gages and valves

Catalog covers line of liquid level gages and valves including pertinent data and specifications. Jerguson Gage and Valve Co. 537

Density gages

Data sheet treats considerations in applying nuclear density gage to sludge measurement and control problems. Ohmart Corp. 538

Heated gages

Four-page brochure gives details and illustrations of gages and valves for use with liquids that must be kept higher than ambient temperatures. Applications are also covered for freezing conditions. Jerguson Gage & Valve Co. 539

Fluid meters

Operation, ranges and installation requirements of line of fluid meters are included in eight-page bulletin. Integrators, compensators and primary elements are discussed. Bailey Meter Co. 540

HORSE SENSE • • • FROM IMAGINATION

Famous Grating Ideas Made Practical!

The Irving record of technical "horse sense" speaks for itself. Listed below are some of the highlights from the Irving company's half century of experience at making grating ideas materialize.

1912	First open steel flooring for industrial plants.
1916	First steel mesh armoring in surface of heavy duty concrete industrial floors.
1917	First open steel mesh for ship walkways.
1927	First open steel mesh for runways on freight car tops.
1927	First continuous grating (one piece for any length and width)
1932	First open steel mesh decking for use on bridges.
1940	First use of portable emergency landing mats for airplanes (U. S. Army).
1943	First open mesh roadway armoring for highways.
1959	First fabrication of magnesium grating.

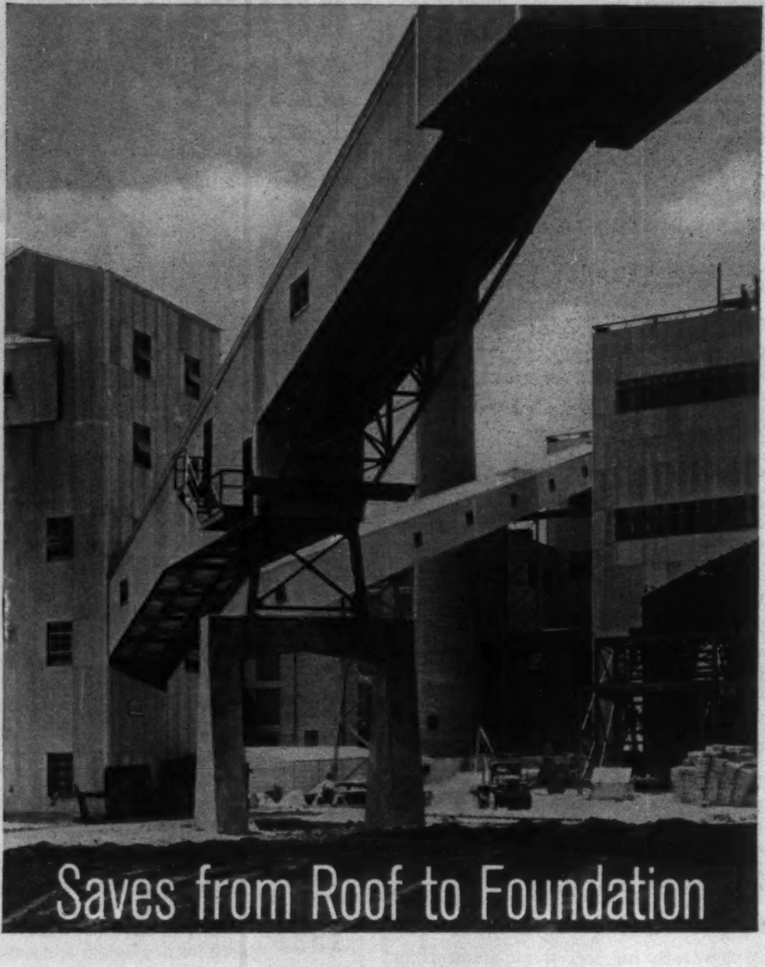
Manufacturers of Riveted, Welded, or Pressure Locked Gratings in steel, aluminum and other metals.

Catalog on request

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902
Offices and Plants at:
5063 27th St., LONG ISLAND CITY 1, N.Y.
1863 10th St., OAKLAND 20, CALIFORNIA

CIRCLE 211 ON READER SERVICE CARD



RUBEROID®
Corrugated Asbestos

Gulf Power Co., one of the South's largest utilities, avoided a lot of maintenance headaches by using Ruberoid Corrugated Asbestos Sheets for roof and sidewalls of this addition to its steam plant at Crist, Florida.

Ruberoid Corrugated Asbestos is incombustible and practically indestructible. Fire, rot, rust, and water can't harm it. Rodents and boring insects shun it. Salt air, humid atmosphere, extremes in climatic heat and cold, industrial fumes—dense, rocklike Ruberoid Corrugated Asbestos resists them all.

Installation economy is an important advantage when using Ruberoid Corrugated Asbestos. It permits construction without sheathing, so foundations, footings and steel or wood supporting members can be lighter, reducing overall building weight. Many of today's construction cost problems are solved with tough, non-rattling, virtually maintenance-free Ruberoid Corrugated Asbestos.

Get complete specification data. Write The RUBEROID Co., Industrial Products Division, 500 Fifth Avenue, New York 36, New York.

The RUBEROID Co.®

CORRUGATED ASBESTOS CEMENT ROOFING AND SIDING

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Under floor distribution system

Illustrated booklet describes underfloor distribution system, components and assembly details for power, telephone and intercom systems. 20 pages. The National Supply Co. **541**

Lighting

The reasons why a bright city is a safe city are explained in a 20-page booklet. Kerrigan Iron Works. **542**

Methods

Concrete design

Framing a school building with precast frame, floor and roof units and concrete block bearing walls is described in a six-page folder. The Flexicore Co., Inc. **543**

Atomic reactors

Illustrated, 28-page booklet describes design and construction of atomic reactors. Research and production facilities devoted to atomic energy are explained. Allis-Chalmers Co. **544**

Metal building standards

Recommended design practices for metal buildings including definition, application of dead and live roof loads, wind load, crane loads, earthquake loads and load combinations plus deflection limitations and minimum standard for panel thicknesses. 27 pages. Metalbuilding Manufacturers Assn. **545**

Steel erection

Brochure describes the steel construction services—from design through erection—offered by Yuba Consolidated Industries, Inc. 12 pages. Yuba Erectors. **546**

Plumbing for decks

A 12-page manual describes ways to provide openings for plumbing in precast concrete decks. It details those openings framed during construction or those hand-cut or drilled after the deck is in place. Flexicore Co., Inc. **547**

Dredge

Five-page paper describes method of sand and gravel recovery with new dredge. Meckum Engineering, Inc. **548**

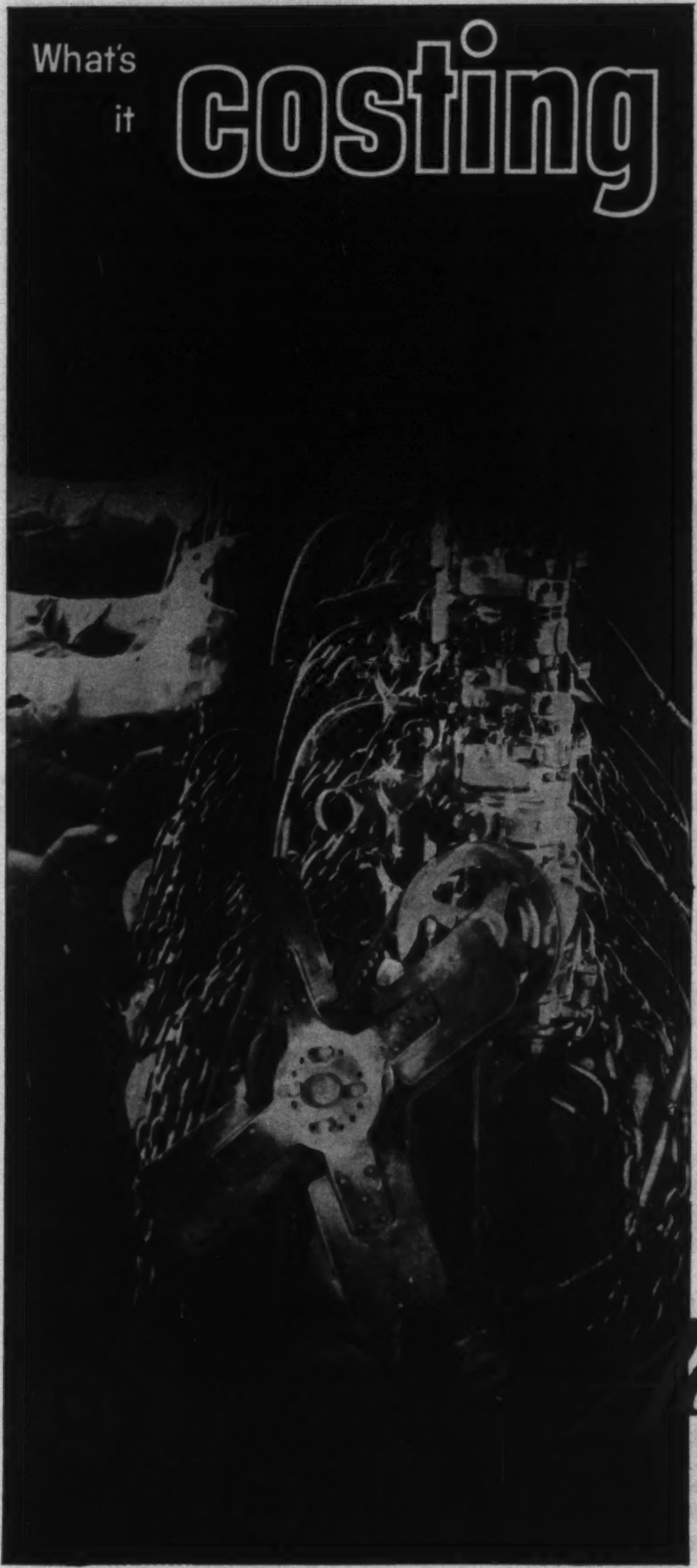
Asphalt paving

The application of hot asphalt is explained in an eight-page brochure. Wylie Mfg. Co. **549**

Ripping

The use of seismic analysis to determine the feasibility of ripping soil rather than blasting it is presented in an eight-page illustrated booklet. Caterpillar Tractor Co. **550**

What's it costing you to doctor tired engines?



Good as today's engines are, the cost of operation is a whale of a lot higher than it has to be if you're still using old-fashioned equipment with clutch pedal and clash-box.

For with a hydraulic drive – like Allison's Torqmatic – you can free your engines from the shock-loads and strains which stick-shifts cause.

You see, Torqmatic Drives extend engine life by virtually eliminating one of the main causes of engine wear – lugging. And they get more work out of an engine, too, because there's no power lag when the driver shifts.

SAVE MONEY AUTOMATICALLY

What's more, Torqmatic eliminates all engine-disconnect clutch repairs – saving owners of big equipment an average of $800 a year in parts and labor. It saves up to $2,000 in equipment damage every time you train a rookie in operating big equipment – practically eliminates high repair bills for unavoidably shock-loaded drive lines and axles.

Just from the operating cost angle, the man with Torqmatic advantages–who thinks about *total* cost, not just first cost – figures to head off a lot of competitors. Interested? See your equipment dealer today or write Allison.

Allison Division of General Motors
Indianapolis 6, Indiana

In Canada: General Motors Diesel Ltd.,
London, Ontario

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR, MODERN EQUIPMENT

CIRCLE 213 ON READER SERVICE CARD

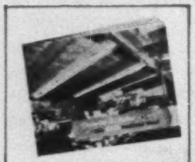
Seaman Products Factory, Burbank, California. Constructed with 26 Rilco laminated wood beams up to 49′ 7¼″ in length.

"Definitely Superior for Economy, Erection and Final Appearance"

"The selection of Rilco laminated wood beams was the result of careful study and comparison with other materials," states Jack L. Randall, Randall Engineering, Woodland Hills, California, concerning the Seaman Products Factory, Burbank, California. "We found them to be definitely superior for economy, erection and final appearance."

Rilco laminated wood structural members offer many construction advantages. Their initial cost is low, erection fast and easy, maintenance practically nil. Each member has a high strength to weight ratio plus offering the superior fire resistance qualities of glued laminated wood.

And Rilco structural members arrive at job site on time. Comments Mr. Randall: "Dealing with Rilco greatly minimized field schedule problems due to their excellent cooperation and service." Rilco service engineers will be happy to consult with you, without obligation.



Write for free commercial construction catalog.

SEE OUR CATALOG IN SWEET'S

RILCO
works wonders with wood

RILCO LAMINATED PRODUCTS
W801 First National Bank Building
St. Paul 1, Minnesota

DISTRICT OFFICES: Tacoma, Wash., Fort Wayne, Ind., Newark, N. J.

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Arc welding manual

A pocket-size, 14-page, illustrated instruction manual describes the operation and use of the carbon arc welding process. Arcair Co. 551

Aluminum welding

A 40-page manual surveys welding, brazing and soldering of aluminum by inert-gas-shielded metal arc and other modern arc and gas-welding processes. All-State Welding Alloys Co., Inc. 552

Waste treatment

Modern processes and equipment for sewage and industrial waste treatment-activated sludge process, mechanical aeration, screening, girt removal, etc.—described in 24-page manual. American Well Works. 553

Heating manual

Three sections: residential, commercial and technical. Covers basic hydronics principles, boiler sizing, system design, replacement piping, installation and operation data, control specifications, pump data, performance charts and graphs. 150-page loose leaf binder. A. O. Smith Corp. 554

Heating costs

Describes how to reduce installation cost of steam heating systems including work preparation, management and material control and employees utilization. The Institute of Boiler and Radiator Manufacturers. 555

Valve specification

Describes the relative ability of metals, plastics and synthetic rubbers used in the manufacture of flow-ball valves to resist corrosive effects of 390 different fluids encourtered in industry. Seven pages. Hydromatics, Inc. 556

Tile bonding charts

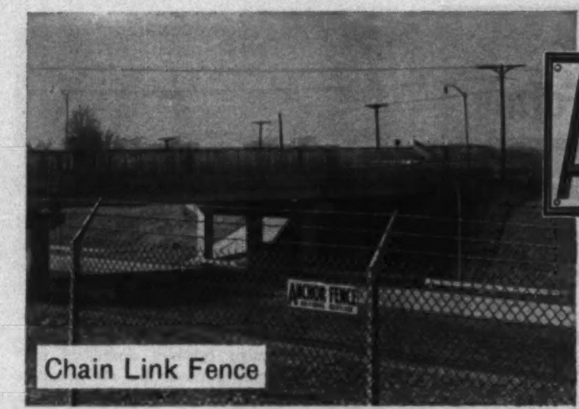
Charts give detailed information and specifications on the proper types of adhesives to be used in varying applications of ceramic tile work and insulation projects. Miracle Adhesives Corp. 557

Masonry drilling

New methods of drilling concrete, either with or without reinforcing rods, or any other type of masonry, together with the equipment used in these drilling processes, are all shown in eight-page catalog. New England Carbide Tool Co., Inc. 558

Paint chalking on masonry

Causes of effluorescence and early chalking on painted masonry surfaces together with methods for overcoming and preventing the deterioration are covered in a 48-page booklet. Film swelling, stability, pigmentation and pigment volume concentration are also covered. Rohm & Haas Co. 559


Chain Link Fence

Guard Rail

ANCHOR FENCE

Division of ANCHOR POST PRODUCTS, INC.®

Provides Profitable Plus Factors . . .

Technical Assistance—Reliability—Experience —Nationwide Service—Prompt Erecting

How do you choose your subcontractor for fencing and guard rail when the bids are close? Naturally, you look at the intangibles—the kind of plus factors that often make a big difference in your profit on the *finished job.* With Anchor it's a point of pride to be able to offer more than just top-quality materials. In back of every Anchor bid is over 68 years of experience on jobs in every corner of the country. Anchor maintains 44 regional offices, ready to give you on-the-spot technical help and prompt erecting service. There's an office near you. Why not give them a call? And for more data on all Anchor safety devices, write:

ANCHOR POST PRODUCTS, 6541 Eastern Ave., Baltimore 24, Md.

CIRCLE 14 ON READER SERVICE CARD

NOW! INSPECT SEWERS BY TV!

Closed Circuit TV Survey Widely Acclaimed by Municipalities and Consulting Engineering Firms

Stops guessing where leaks, infiltration, breaks and other hidden troubles are in sewers, new or old. Pin-points leaks, infiltration, obstructions, lost house connections, etc. continuously and right before your eyes as the TV camera travels through the sewer. Even permits inspection of previous cleaning and repair jobs.

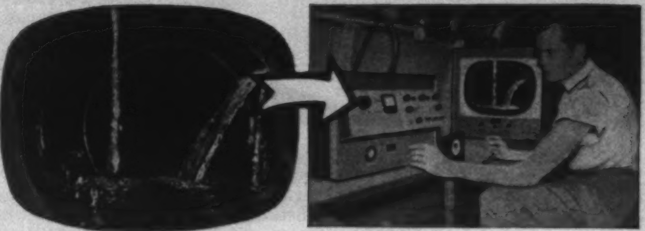
METHOD

A waterproof non-magnetic camera is pulled through the sewer by a cable, transmitting to an above-ground monitor an instant and continuous picture of the exact conditions inside the sewer. Self-contained, completely mobile unit, utilizing a newly developed I.P.R.C. TV camera, in any sewer 6" in diameter or larger.

Finding—not fixing—sewer troubles is what costs the money. This TV system makes the finding quick, simple, sure, at enormous savings.

A PROVEN SUCCESS

Already accepted and acclaimed by the Washington Suburban Sanitary Commission, Md. and the Municipalities of Fairview Park, Ohio; Hatfield Borough, Pa.; San Francisco, Calif.; Belle Glade, Fla.; etc.



TO BETTER SERVE YOUR COMMUNITY, Franchise Agreements are presently being placed on a state-wide and international territorial basis.

Industrial Pipe Repair
CORPORATION
4720 Baltimore Avenue • P.O. Box 389
Hyattsville, Maryland • WA. 7-2329, 7-6706

CIRCLE 215 ON READER SERVICE CARD

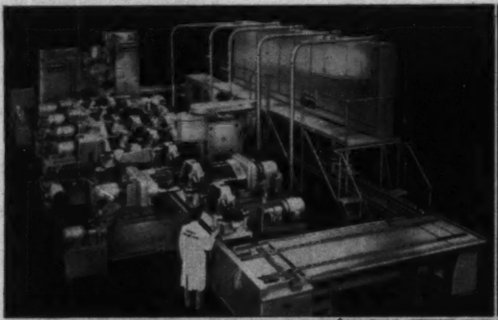
Complicated Concrete Forms Eliminated by WELD-CRETE®

-the amazing liquid bonding agent!

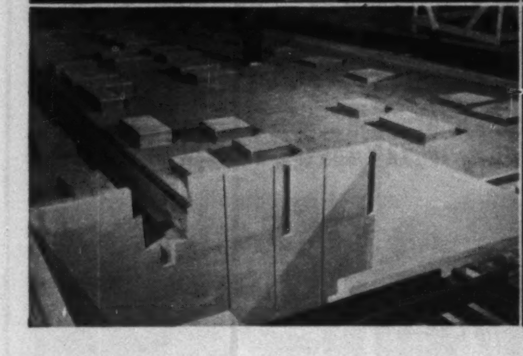
Produces substantial savings for Eaton Manufacturing Company

The Problem: To install two 75-ton 25′ x 67′ milling and drilling machines on concrete floor of Cleveland plant. Machine had to rest on piers rather than floor itself, and forms required for single pour of these mounts were extremely expensive.

Weld-Crete the Answer: Weld-Crete was brushed on 36″ thick base floor at spots where 80 piers were to be located. With the simplest of forms, these 8″ thick piers were later poured with assurance of a permanent bond to the base. The $650,000 machines have operated on these mounts for over three years.



75-ton machine mounted upon 80 concrete piers permanently bonded by Weld-Crete to concrete floor base.



Shows some of 80 piers bonded to concrete base by Weld-Crete. Simple bonding replaced complicated forming, resulted in appreciable savings in installation of 75-ton machines shown above.

Whether you're installing new equipment, moving old, or repairing floors . . . Weld-Crete enables you to *permanently* bond new concrete *directly* to old . . . or *any* sound surface. No costly, time-taking chipping, drilling, roughening, acid washing or scarifying of concrete base. When used with quick setting cement topping, you can lay new floors, ramps, driveways, etc., and run heavy truck traffic over them the next day. The insurance of a permanent bond with Weld-Crete costs as little as 4c per square foot! Get fact-packed literature about Weld-Crete from your Weld-Crete dealer, see Sweet's File, or write us direct.

The use of Weld-Crete is protected by U. S. Patent 2,760,885

LARSEN PRODUCTS CORPORATION

Box 5756I Bethesda, Md.

For Bonding Plaster to any surface . . . ask for Plaster-Weld®

Wall treatment

Twenty-page specifications booklet, with drawings and illustrations, describes correct Thoro System materials for patching, waterproofing and coating concrete masonry or stucco. Standard Dry Wall Products, Inc. **560**

Conductor cables

Sag and tension charts for covered and bare aluminum conductor cables fill a 100-page bulletin. Aluminum Company of America. **561**

Piping

Illustrated 20-page booklet describes installations of piping made by the manufacturer at power plants (some nuclear) and for process industries. Midwest Piping Co., Inc. **562**

Traffic buttons

The installation of plastic traffic markers is explained in an eight-page bulletin. Thiokol Chemical. **563**

Miscellaneous

Inflatable forms

Resuable inflatable void forms for: prestressed and precast products, cast in place products, drains, monolithic sewers and monolithic pressure are described in a 12-page booklet. Elgood Concrete Services Corp. **564**

Scaffolding

Heavy-duty scaffold for shoring purposes described in a four-page folder. Beaver-Advance Corp. **565**

Scrubbers

A line of revolving scrubbers for cleaning sand, gravel, stone and ores is pictured and explained in a four-page folder. McLanahan & Stone. **566**

Exhaust purifiers

Exhaust purifiers for oxidizing carbon monoxide, fumes and odors from gasoline, lp-gas and diesel-powered equipment are illustrated in four-page folder. Oxy-Catalyst, Inc. **567**

Hoist control linkage

Bulletin describes a closed-circuit, hydraulic instrument that links any crane hook and its load to provide fast, accurate load positioning. 4 pages. Mefco Sales & Service, Inc. **568**

Power tools

Complete line of hand and bench-operated power tools, including saws, drills, sanders, grinders and buffers, as well as blowers and industrial vacuum cleaners. Skil Corp. **569**

Explosives

A truck body which carries dry ammonium nitrate and automatically mixes the oil during the unloading operation, is explained in a two-page flyer. Baughman Mfg. Co. **570**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Trip records

The Tachograph, an instrument which graphically records time, mileage, speed and operation of vehicles is explained in an eight-page booklet. Wagner Electric. 571

Cell testing

A 16-page booklet featuring truck and trailer field laboratories and cataloging a line of test lab equipment. Testlab Corp. 572

Welding equipment

New edition of Aircomatic welding equipment covers the manufacturers complete manual and automatic line. New items are a manual gun for applications using carbon dioxide as a shielding gas, and two machine heads for production line welding. Air Reduction Sales Co. 573

Welding machines

A 12-page booklet illustrates and describes 40 different welding machine models, both ac and dc. Miller Electric Manufacturing Co., Inc. 574

Welding equipment

Illustrated booklets form a revised catalog of manual, semi-automatic and automatic Heliwelding and Aircomatic equipment. Information included on accessory equipment. Air Reduction Sales Co. 575

Welding machines

Describes control and operating equipment for ac as well as dc machinery together with performance tables on each model. 12-pages. Harnischfleger. 576

Welding electrodes

A 24-page welding electrode catalog describes the manufacturer's complete line of welding electrodes, gas welding rod, non-consumable electrodes, submerged arc welding flux and automatic welding wire. Hobart Brothers Co. 577

Welding filler rods

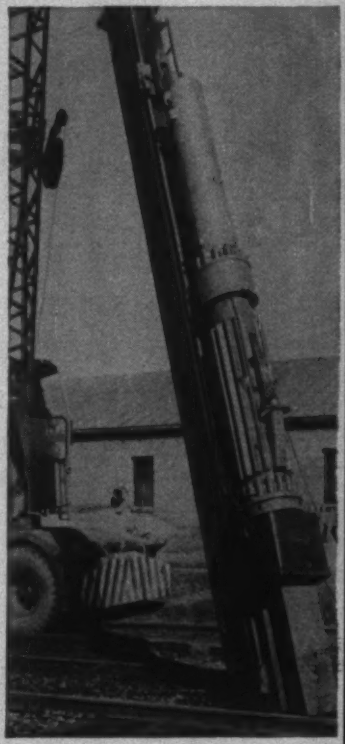
Comparison chart lists 23 NCG welding filler rods for use in welding nine different metals. Chart also illustrates and describes ten different fluxes. National Cylinder Gas Div., Chemetron Corp. 578

Metals tester

A six-page data sheet describes the TMI Motorized Impact Tester for Metals. The machine makes either the cantilever beam, simple beam, or tension impact test. Testing Machines, Inc. 579

Rust remover

Folder describes application of "Rust-I-Cide" for cleaning rusted equipment and preparing new metal. Rusticide Products Co. 580



DELMAG

DIESEL PILE HAMMERS

for top performance

LOWER OPERATING COSTS

Engineered for top performance, Delmag Diesel hammers provide many exclusive, advanced features that contribute to their tremendous popularity. Weighing less than comparative hammers, they give you more ft.-lbs. for each pound of weight than any other hammer on the market today. Compactness, simplicity, plus all-weather adaptability make for greater economy.

See how Delmag, oldest and most experienced makers of Diesel hammers helps you to cut your operating costs.

MOST POWERFUL

MOST EFFICIENT

MOST ECONOMICAL

MOST ADVANCED DESIGN

Three Models Available:

D-5
9100 Ft. Lbs.

D-12
22500 Ft. Lbs.

D-22
39700 Ft. lbs.

Illustrated literature sent on request.

The Foundation Equipment Corp.,
100 Elizabeth St., Newcomerstown, Ohio

Martz Machinery Co.,
988 Market St., San Francisco 2, Calif.

Andrews Machinery of Washington Inc.,
3633 East Marginal Way, Seattle 4, Wash.

Special Construction Machines, Ltd.,
166 Bentworth Ave., Toronto 19, Ont.

CIRCLE 217 ON READER SERVICE CARD

"We know the value of a completely engineered ELLICOTT DREDGE"

Says Mr. Leonard Mulbry of the New Smyrna Dredging Company, operating in the waterway community "VENEZIA," at New Smyrna Beach, Florida. "This is our third year of operation with the dredge "Bold Venture" obtained from Ellicott in 1957," continues Mr. Mulbry. "By now we have been able to determine the value of obtaining a completely engineered dredging unit from a reputable company, rather than building one ourselves, or obtaining one from a less well established firm."

"We are more than satisfied with the production and operation of our Ellicott 'DRAGON®' Dredge. It is not only well engineered and accurately constructed, but easy and economical to operate. Our records show that *this purchase was the wisest decision we ever made*. Per dollar invested in the dredge and its operation, we are able to get about twice the land area pumped up as by other means. We estimate the *savings will be close to $500,000* by the time the project is completed."

You can enjoy similar savings with an Ellicott "DRAGON®" Model Dredge, designed and manufactured by a company now marking its 75th year in designing and building dredges and dredging equipment. Write for information to Ellicott Machine Corporation, 1603 Bush Street, Baltimore 30, Md.

2378

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Booklet, completely illustrated, describes in 26 pages how wire rope should be used —and is often abused. Union Wire Rope. Splicing and accessory fitting details provided. Armco Steel Corp. **584**

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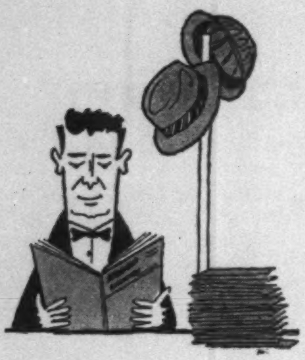

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600. **How to Use High Strength Steel Effectively**—California is finding novel ways to use the material in highway bridges.

601. **New York Tries Aluminum Bridges**—Goal: Cheaper construction and maintenance.

602. **New Reactors Spur Research for Inexpensive Nuclear Power**—Here's the basic information you should have.

603. **New Slipform Paver Makes Roads Smooth**—California's getting good mileage out of its equipment.

604. **Fitting Cities to the Future**—Focus: Pittsburgh. Application: anywhere. ENR's 24-page special report copped top honors for business paper reporting in '59.

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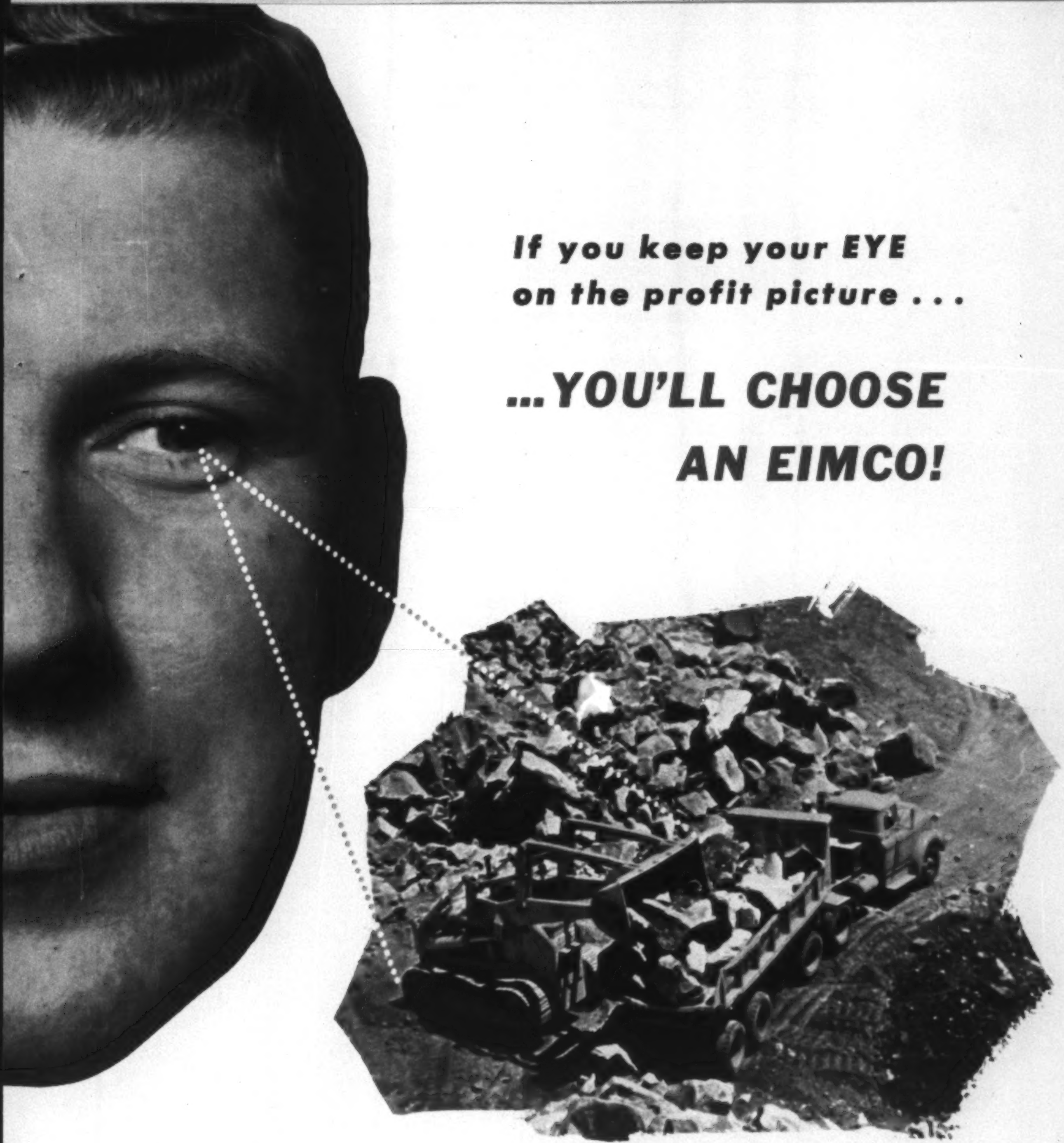

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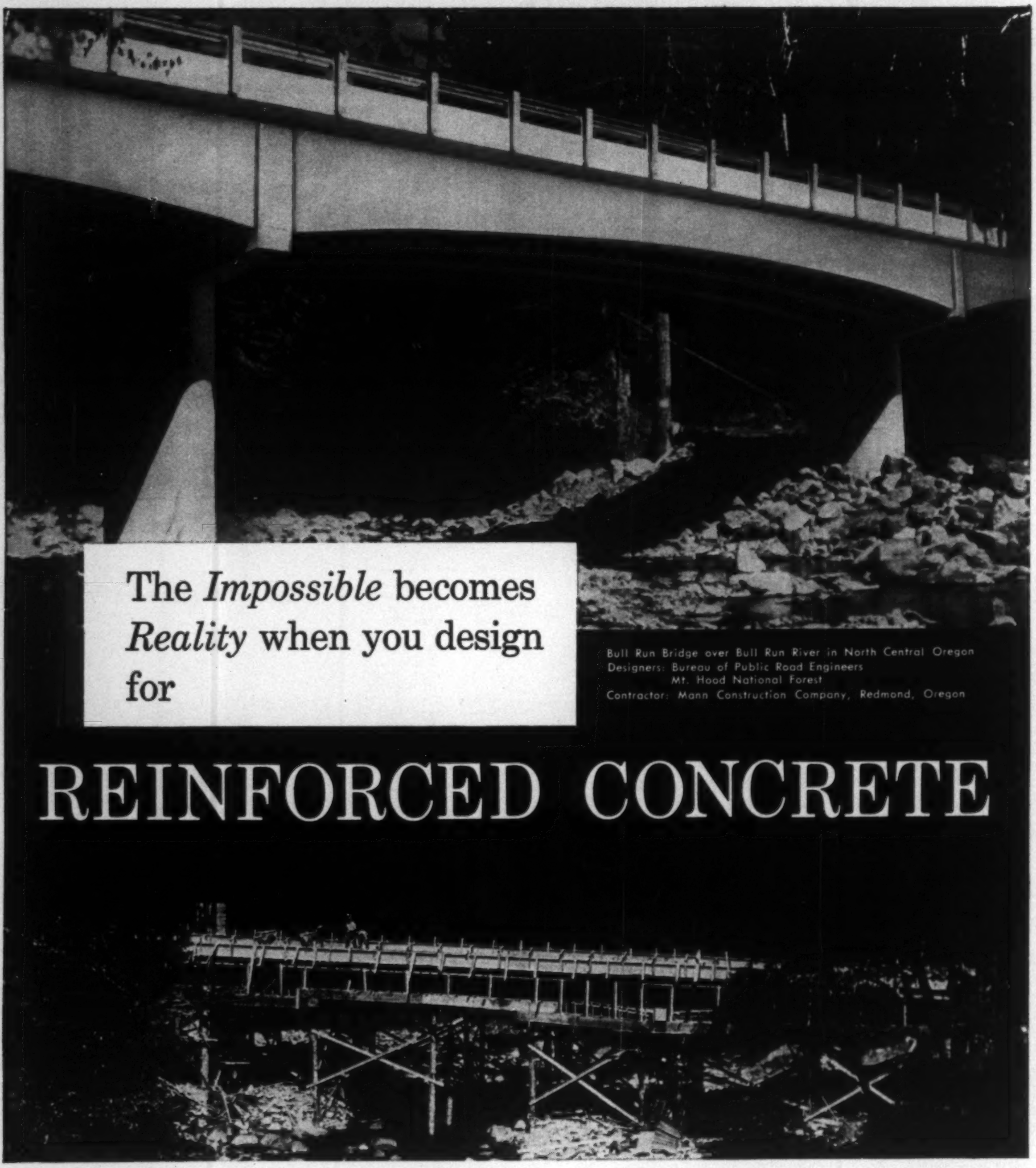

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NEW ENGLAND

HEAVY CONSTRUCTION—BA

Conn., Glastonbury—BA 6/28—Town Sewer Comn., Town Hall, Contract 1-41, 477 ft. 6, 8, 10 and 12 in. clay and cement asbestos pipe sanitary sewers, various hys., 120 manholes, one underground pumping station; Contract 2, 30,909 ft. 6, 8, 10, 12 and 18 in. clay and cement asbestos pipe sanitary sewers, various hys., 80 manholes, one underground pumping station, plans deposit $40 each. James P. Purcell Assocs., 3315 Berlin Turnpike, Newington, engrs. CD 6/20/56.

MASSACHUSETTS—BA 6/28—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
North Attleboro—Chapter 90, reconstr. North and South Washington and Elm Sts. $100,000. Plans deposit $10.

MASSACHUSETTS—BA 6/28—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Canton—hy. work, Rte. 24. $29,500. Plans deposit $5.
Essex—hy. reconstr. Main St. and Wise Ave. $21,000. Plans deposit $10.
Rehoboth—hy. reconstr. Rte. 44. $50,000. Plans deposit $5.
Somerset—hy. work. $10,000. Plans deposit $5.

† **R. I., Quonset Point**—LIGHTING, etc.—BA 6/28—Officer in Charge of Constr., Bldg. 438, U.S. Naval Air Station, Quonset Point, lighting and secondary electrical services for Avionics Shop in Landplane Hangar 3, Bldg. 5, U.S. Naval Air Station. NBy 29579. Under $25,000. Plans deposit $10.

† **R. I., Quonset Point**—DEVELOP AREA, DISPOSAL OPERATIONS, etc.—BA 6/28—Officer in Charge of Constr., Bldg. 438, U.S. Naval Air Station, Quonset Point, develop area for disposal operations in Warehouse W-1, Bldg. 375, removal of existing structural steel tower and hoists, resurf. floor, repair of wood and fibreboard partitions, etc. U.S. Naval Air Station. NBy-33408. Under $10,000. Plans deposit $10.

Conn., Newton—ELECTRICAL DISTRIBUTION—BA 6/29—State P. Wks. Comrs., 165 Capitol Ave., Hartford, Proj. BI-A-135, electrical distr. system imprvts., Fairfield State Hospital.

Conn., Plymouth—BA 6/29——Plymouth Sewage Authority, 130 Main St., Terryville, Contract 2, trunk sewer. Gibbs & Hill, Pennsylvania Station, New York, N. Y., engrs. CD 6/14, under LB.

† **R. I., Davisville**—FIRE PROTECTION SYS.—BA 6/29—Dist. P. Wks. Office, 1ND, 495 Summer St., Boston 10, Mass., fire protection sys. G. S. A. Warehouses, U. S. Naval Construction Battalion Center, NBy-29554, Spec. 29554/59. $25,000-$100,000. Plans deposit $25. CD 8/11/54, under Public Buildings.

NEW HAMPSHIRE—BA 6/30—Dpt. P. Wks. & Hys., Concord,
Strafford Co.—hot b. conc. roadway 3.169 mi. New Durham.

MASSACHUSETTS—BA 7/6—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Fitchburg—hy. work, Broad St. $153,300.
Rockland — section relocated Forest St. N-S-RD-8(2). $290,000.

Worcester—furnish and install signs Int. State Rte. 290.1-290-(11) 96. $170,000. Plans deposit $10 each.

▲ **MASSACHUSETTS**—BA 7/6—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Andover—section Int. Rte. 495, incl. three bridges, 1-495-6(21)75. $1,870,000. Plans deposit $25. CD 5/19.

BUILDINGS—BA

▲† **Me., Topsham**—HOUSING—BA 7/12—Base Procurement Office, Topsham Air Force Station, Brunswick, Me., 177 units Capehart Housing, Topsham Air Force Station, IFB 17-612-60-2. $2,900,000. Extended date. Kelly & Gruzen, 10 Columbus Circle, New York, N. Y., archts.-engrs. CD 5/25.

Mass., Fall River—HOSPITAL—BA 6/28—Union Hospital, 538 Prospect St., hospital addn., Hanover St. $400,000. Plans deposit $350. Curtin & Riley, 45 Newbury St., Boston, Mass., archts. CD 3/29.

▲ **Mass., Cambridge**—OFFICE—BA 6/30—New England Gas & Electric Assoc., 10 Temple St., office, Austin St. between Prospect and Temple Sts. $1,000,000. Plans deposit $80. Sert, Jackson & Gorley, 4 Brattle St., Cambridge, Mass., archts. CD 2/15.

▲ **Conn., Bridgeport**—HOUSING—BA 7/22—Bridgeport Housing Auth., 252 Hallett St., 96 unit housing for elderly, Second Section, Fireside Apartments, $1,000,000. Lindsay & Johnson, 211 State St., archts. CD 3/16.

HEAVY CONSTRUCTION—LB & CA

▲ **MAINE**—State Hy. Comn., Augusta,
Me.—Forest Frederick, Pittsfield, Me., CA $510,539, (7 bidders), b. conc. road and bridge 3.22 mi. Towns of Bucksport and Orland. FAP No. F-042-1 (8), Hancock Co., CD 5/24,
Me.—Frank Rossi & Sons, Inc., National Bank Bldg., Gardiner, Me., CA **$751,898**, (4 bidders), grading, drainage and base, Veranda Street Bridge 0.425 mi. Int. Rte. 295, City of Portland. FAP No. I-295-3 (2) 51, Cumberland Co. CD 5/18,
Me.—Lee Brothers, Albion, Me., CA **$270,814**, (7 bidders), b. conc. road (Stage Constr.), 4.095 mi. Vassalboro-China, Rtes. 3, 9, 32 and US 202, FASP No. S-0210 (11). Contr. 2 and S-0215 (8), Contr. 1. Grand total $1,533,251. Bids June 8.

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord,
Munroe-Langstroth, Inc., 1390 Providence Turnpike, Norwood, Mass., LB **$94,116**, reconstr. rein.-con. deck on Memorial Bridge, U.S. 1, over Piscataqua River, Portsmouth, Rockingham Co.

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord, Bids opened 5/26,
M. DeMatteo Constr. Co., 200 Hancock St., Quincy, Mass., LB **$579,353**, hot asphaltic roadway and two 139 ft. and 142 ft., 3-span steel beam bridges on 0.938 mi., Salem, Rockingham Co. CD 5/11.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, bids opened 6/1,
Bayer & Mingolla Constr. Co., Inc., P. O. Box 991, Worcester Mass, LB **$229,250**, (18 bidders), hy. work, bridge Elm St. FAP SG-262 (2), Walpole, Norfolk Co. CD 5/18.

Steele & Assoc., Inc., 100B Crescent N.E., Atlanta, Ga., LB **$131,960**, est. $300,000, MPA 3.006 cathodic protection sys. Hoosic-Mystic and E. Boston Pier 1 and Castle Island, Charlestown, South Boston and East Boston, BOSTON, MASS. Commonwealth of Mass., Port Auth., 141 Milk St., Boston, Mass. Bids June 7. CD 5/11.

C. DiMartino & Sons, Inc., 86 Clare Ave., Hyde Park, Mass., LB **$411,960**, est. $500,000, stream imprvts. West Tatnuck Brook, Worcester, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids June 7. CD 5/27;
Leo Constr. Co., 1083 School St., Webster, Mass., LB **$219,869**, est. $250,000, stream imprvts. Cady Brook, Southbridge (Massachusetts).

Joseph Perry, Inc., 906 Hathaway Rd., New Bedford, Mass., LB **$215,796**, est. $296,116, river bank protection, Merrimack River, Lowell, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids June 7. CD 5/27.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

† **The Arundel Corp.**, 334 Furman St., Brooklyn, N. Y., LB **$167,250**, est. $260,000, remove material incl. ledge rock, Fore River, vicinity Nantasket Gate, Weymouth, CIVENG 19-016-60-52, MASSACHUSETTS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids June 7. CD 6/2.

Mid State Contracting Co., 67 Mechanic St., Orange, Mass., LB **$234,641**, est. $244,000, M 58-2 Contr. 2, water supply distrib. State Hospital, GARDNER, MASS. Commonwealth of Mass., Dpt. Mental Health, Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids June 7. CD 5/25.

Sterling Engineering Constr. Co., Inc., 1182 North Main St., Providence, R. I., LB **$674,823**, est. $800,000, Mary E. Fogarty ELEMENTARY SCHOOL, Oxford, Sales and Milner Sts., South Providence, PROVIDENCE, R. I. City, City Hall, Providence, R. I. Bids June 7. CD 5/18.

Capaldi Bros. Corp., 278 Silver Spring St., Providence, R. I., LB **$275,225**, est. $240,000. Contr. 59/60-1, water mains-power crossing, WOONSOCKET, R. I. City, Purchasing Agent, City Hall, Woonsocket, R. I. Bids June 9. CD 6/2.

▲ **Town of Plymouth Sewer Auth.**, 130 Main St., Terryville, Conn., rejected bids opened May 19, Contract No. 3, laterals sewers, Riverside Ave., LB **$934,040**; Contract No. 2, trunk sewers to Eagle St., LB **$428,384**, Terryville, PLYMOUTH, CONN. Will re-advertise. CD 5/31, under LB.

Enfield Road Constr. Co., Inc., Depot Hill, Warehouse Point, Conn., LB **$529,028**, (7 bidders), Proj. BI-CC-88, strengthening, extending runways, taxiway modification, Bradley Field, WINDSOR LOCKS, CONN. State P. Wks. Comrs., 165 Capitol Ave., Hartford, Conn. Bids June 8. CD 5/23.

BUILDINGS—LB & CA

† **Dist. P. Wks. Office**, First Naval Dist., 495 Summer St., Boston, Mass., received no bids June 8, Capehart Housing Proj. Title IV, Cutler Radio Station, NBy (CH 22968, Spec. 22968/58, JONESPORT, ME. Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., archts. CD 6/1.

William H. DeLong, RFD 2, Middlebury, Vt., LB **$817,803**, est. $900,000, Otter Valley Union High SCHOOL, BRANDON, VT., Brandon-Pittsford Union School Dist., Brandon, Vt., Bids June 9. CD 5/24.

Canter Constr. Co., 185 Corey Rd., Brookline, Mass., CA Approx. **$500,000**, MANUFACTURING PLANT addn., Harrison Ave., BOSTON, MASS. Green Shoe Manufacturing Co., 960 Harrison Ave., Boston, Mass. Linenthal & Becker, 16 Lincoln St., Boston, Mass., engrs.

Walsh Bros., 150 Hampshire St., Cambridge, Mass., LB **$558,874**, est. $550,000, HOSPITAL addn., Warren St., BRIGHTON, MASS. Joseph P. Kennedy Jr. Hospital, 50 Warren St., Brighton, Mass. Bids June 8. CD 5/23.

George B. H. Macomber, 25 Fordham Rd., Brighton, Mass., CA Approx. **$275,000**, steel frame INDUSTRIAL PLANT, BURLINGTON, MASS. Northwest Industrial Park, Jct. Rtes. 3 & 128, c/o Nordblom Co., 50 Congress St., Boston, Mass.

▲ **Charles Logue Bldg. Co.**, 70 Needham St., Newton, Mass., LB **$1,407,599**, est. $1,450,000, Peabody ELEMENTARY SCHOOL, Lineen St., CAMBRIDGE, MASS. City, Supt. Bldgs., Inspector Bldgs., City Hall, Cambridge, Mass. Bids June 10. CD 5/11.

Carroll St. Hilaire & Sons, Inc., 509 Main St., Fitchburg, Mass., LB **$697,989**, est. $700,000, Proj. 3, SURGERY addn. to Heywood Hospital, GARDNER, MASS. Henry Heywood Memorial Hospital, 242 Green St., Gardner, Mass. Ellerbe & Co., 333 Sibley St., St. Paul, Minn., archts.-engrs. CD 4/4/57.

† **Welbilt Constr. Inc.**, 815 Washington St., Newton, Mass., LB **$106,510**, est. $109,610, data collection LABORATORY (FY 60), Laurence G. Hanscom Field. ENG-19-16-60-76, HAMILTON, MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids June 7. CD 5/18.

J. Stivalleta & Sons, 505 High St., Dedham, Mass., Owner Builds, Approx. **$453,000**, 15 HOUSES, (5th section) off Rte. 28, MILTON, MASS.

William Merola & Sons, Hyde Park, Mass., CA Approx. **$400,000**, 18 HOUSES, off Truman Hy., MILTON, MASS. Owner, c/o Contractor.

Owner, c/o Jack Conway & Co., Rte. 3A, Scituate, Mass., Owner Builds, Approx. **$400,000**, 17 HOUSES, Country Club Circle, North Scituate, SCITUATE, MASS.
Bay State Development Co., Inc., Fisher St., Walpole, Mass., Owner Builds, Approx. **$412,000**, 19 HOUSES, Lakewood Terrace, off Fisher St. and Rte. 128, WALPOLE, MASS.
William H. Porter Co., Inc., 84 Arsenal St., Watertown, Mass., CA **$110,000**, est. $125,000, LABORATORY, addn., WATERTOWN, MASS. Frederick S. Bacon Laboratories, 192 Pleasant St., Watertown, Mass. Bids Feb. 24. CD 2/17.

Rizzitelli Constr. Co., 327 Lincoln Ave., Bridgeport, Conn., CA $110,000, 2 story, masonry furniture WAREHOUSE addn., 235-245 Boston Ave., BRIDGEPORT, CONN. Sooren Hovhannissian, 235 Boston Ave., Bridgeport, Conn. Awarded June 9. CD 3/16.

▲ **Edwin Moss & Son, Inc.,** 555 Grant St., Bridgeport, Conn., CA $1,000,000, 2 story, 42,000 sq. ft. brick, stone OFFICE, Air Conditioning, West St., DANBURY, CONN. Southern New England Telephone Co., 227 Church St., New Haven, Conn. Bids May 27. Awarded June 9. CD 6/10.

† **The Metrig Corp.,** 2436 McDonald Ave., Brooklyn, N. Y., CA $846,985, public quarters dolphin gardens (Wherry) HOUSING RENOVATIONS, imprvs., NBy 26776, GROTON, CONN. Area P. Wks. Office, Federal Office Bldg., 90 Church St., New York, N. Y. Bids May 19, awarded June 6. CD 6/2, under LB.

▲ **Ferrigno Corp.,** 544 Main St., Newington, Conn., Owner Builds, $1,310,000, 131 HOUSES, Tom-Lin Heights, NEWINGTON, CONN. CD 6/28/51.

Ingham Hill Corp., 523 Boston Post Rd., Old Saybrook, Conn., Owner builds, $544,000, 34 HOUSES, Windsor Oval London Court, Forest Glenn Rd., Windsor Court West, Cambridge Court, Tudor Court, OLD SAYBROOK, CONN.

▲ **Cirillo Constr. Co.,** 152 Main S., Derby, Conn. CA $1,000,000, 1 story, 100,000 sq. ft. SHOPPING CENTER, bowling alleys, Seymour-Ansonia Town Line Holiday Lands, SEYMOUR, CONN. Asmour Shopping Center, c/o Henry T. Moechke, 34 Hillcrest Ave., Naugatuck, Conn., archt. CD 7/1 under Holiday Lands as owner.

▲ **Stone & Goldberg,** 364 W. Middle Turnpike, Manchester, Conn., Owner builds, $1,599,000, 100 HOUSES, Woodland Park Homes, Avery St., SOUTH WINDSOR, CONN.

▲ **W. J. Megin Inc.,** 91 Elm St., Naugatuck, Conn., CA $1,500,000, RESEARCH CENTER, Freight St., WATERBURY, CONN. American Brass Co., 414 Meadow St., Waterbury, Conn. Awarded June 10. CD 1/14.

▲ **Gellately Constr. Co.,** 181 Sylvan Ave., Bridgeport, Conn., LB $2,108,000, (9 bidders), HIGH SCHOOL, WILTON, CONN. Town, High School Bldg. Comn., Town Hall, Wilton, Conn. Bids June 6. CD 5/12.

M. Shapiro & Son, Inc., 180 S. Broadway, White Plains, N. Y., Owner Builds, $400,000, 5 story OFFICE, Summer St., STAMFORD, CONN. Sherwood Mills & Smith, 65 Broad St., Stamford, Conn., archts. Werner, Jensen & Korst, 641 Summer St., Stamford, Conn., engrs.

▲ **John Romano,** East St., Suffield, Conn., CA $1,300,000 1 story, 122,000 sq. ft. air conditioned PLANT, Manning Rd., THOMPSONVILLE, CONN. Hallmark Cards, Inc. 25 and Magee Sts., Kansas City, Mo. CD 3/2.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Tonawanda—BA 6/27—Town, Municipal Bldg., Kenmore, first section, 54 to 60 in. Curtiss Park storm sewer, Town of Tonawanda. $200,000. Theodore A. Krehbiel, c/o owner, town engr. CD 5/9.

D. C., Wash.—BA 6/17—D. C. Govt. Dpt. Hys., 499 Pa. Ave. NW, 1-repairing asph. pavements, concrete bases (1st Fall Asphalt repair-1960); 2 b. conc. covering various roadways (3rd Spring Cover Contract). CD 10/8.

MARYLAND—BA 6/28—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,
Cecil Co.—grade, drain, surf. Red Pump Rd. relocation, Rising Sun. Plans deposit $15. Norman Pritchett, c/o owner, ch. engr. CD 5/14/56.

† **Md., Patuxent River**—SUBSTATION—BA 6/28—Officer in Charge of Constr., U. S. Naval Air Station, Patuxent River, Md., substation, Auxiliary Landing Field, Webster Field, U. S. Naval Air Station. NBy-30148. Under $10,000. CD 9/19/58.

† **Md., Patuxent River**—INDUSTRIAL X-RAY LABORATORY—BA 6/28—Officer in Charge of Constr., U. S. Naval Air Station, Patuxent River, Md., industrial X-ray laboratory, Bldg. 110-A, U. S. Naval Air Station. NBy-30151 Spec. 30151/60. Under $10,000. CD 9/19/58.

† **Md., Patuxent River**—BLDG. ADDN.—BA 6/28—Officer in Charge of Constr., U. S. Naval Air Station, Patuxent River, Md., Bldg. 9 addn., Webster Field, for Shelter for Shielded Room, U. S. Naval Air Station. NBy-30147 Spec. 30147/60. Under $10,000. CD 9/19/58.

† **Pennsylvania**—BA 6/28—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, Erie Railroad structures No. 4 and No. 5, appurtenant work, Shenango River Reservoir, CIVENG-36-058-60-48. CD 12/1, under Pennsylvania and Ohio.

Pa., Phila.—BA 6/28—Procurement Dpt., Room 313, City Hall Annex, Bids Nos. 2575-2583, constr. and reconstr. sewers and appurtenant work. CD 11/8/58.

† **Pennsylvania**—On or about BA 7/6—U. S. Eng., 2635 Abbottsford Rd., Phila., operational facilities, grading, utilities, and landscaping, Bear Creek Reservoir, Luzerne Co., $75,000. CD 9/29.

▲ **MARYLAND**—BA 7/5—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,
Wicomico Co.—grading, drainage, surf. 1.653 mi. relocated US 50 through Salisbury incl. 3 span 28 ft., 70 ft., 36 ft. steel beam bridges, US 13 over relocated US 50, 1 single span 70 ft. steel girder bridge on P. RR over US 50, Salisbury, WI-292-3-6-120, $1,200,000-$2,000,000. Plans deposit $15. A. L. Grubb, co owner, ch. bureau of bridges. Norman Pritchett, c/o owner, ch. engr. CD 5/14/56.

D. C., Wash.—BA 7/6—D. C. Govt., Dpt. Hys., 499 Pa. Ave. NW, roadside development, Bladensburg Rd. NE Benning Rd. to 17th St.; North Capitol St., Bryant to Michigan Ave. and 16th St. (Irving to Pine St.). CD 10/8.

Pa., Ridgway—BA 7/7—Ridgway Municipal Auth., sewage treatment plant, Contr. 2, general constr., Contr. 3, plumbing, Contr. 4, heating, Contr. 5, electrical, Contr. 6, interceptor sewers and sewer extensions. Plans deposit $50. The Chester Engineers, 601 Suismon St., Pittsburgh, Zone 12, engrs.

Pa., Charleroi—BA 7/12—Auth. of Borough of Charleroi, 325-327 McKean Ave., 1.85 m.g. reservoir, Contr. No. 4; fdns., Contr. No. 5, tank superstructure. Plans deposit $25. The Chester Engrs., 601 Suismon St., Pittsburgh, Zone 12, engrs.

PENNSYLVANIA—BA 7/15—Dpt. Hys., Harrisburg,
Clarion Co.—18 ft. wide rein.-conc. bridge 0.48 mi. over Licking Creek Rte. 16058, east of Lickingville.
Franklin Co.—20 ft. wide bridge Rte. 433, 1 mi. SE of Orrstown Borough.
Northampton Co.—18 ft. wide bridge over branch of Hokendauqua Creek 0.16 mi. Rte. 48052.
Northumberland Co.—18 ft. wide bridge over Tipps Run 0.14 mi. Rte. 49043, Riverside.

PENNSYLVANIA—BA 7/15—Dpt. Hys., Harrisburg,
Crawford Co.—widn. pavement 22 ft. wide, bit. surf. on new sect., resurf. bridge decks, bridge 4.08 mi. Rte. 77 from intersection Rte. 697 NE, CD 3/24.
Erie Co.—resurf. 4.59 mi. Rte. 8 from near Erie Throughway SE.
Westmoreland Co.—resurf. 12.42 mi. Rte. 71, SW of Greensburg, CD 3/17.
resurf. 6.76 mi. Traffic 22 and 30, W. of Greensburg, CD 3/17.

D. C., Wash.—BA 7/20—D. C. Govt., Dpt. Hys., 499 Pa. Ave. NW, repair cement concrete roadways, alley pavements, sidewalks, various locations (First Fall Contract 1960). CD 10/8.

▲ **N. Y., Brooklyn**—SUPERSTRUCTURE, SHIPPING TERMINAL—BA 7/20—Comr. Marine & Aviation, Rm. 304, Battery Maritime Bldg., foot of Whitehall St. (South Ferry), New York, Zone 4, Contr. 3062 constr. of superstructure; general contract; Contr. 3062-B, heating, ventilating and air conditioning facilities; Contr. 3062-C, plumbing, standpipe and shipwatering facilities; Contr. 3062-D, sprinkler facilities; Contr. 3062-E, electrical facilities, Shipping Terminal, foot of 39th St. Gowanus Bay. Plans deposit $15 for each contract. CD 7/5/56.

BUILDINGS—BA

▲† **Del., Dover**—HOUSING — BA 6/28—Procurement Officer, Scott Air Force Base, Ill., 250 unit Armed Services Housing Proj., Title 8 Housing, Dover Air Force Base, IFB 11-626-60-12, $3,500,000. Pope & Kruse, 1116 West St., Dover Assocs. archt. CD 2/20/59.

N. Y., New York—REHABILITATION OF LIBRARY—BA 6/28—Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York, Zone 7, rehabilitation Tompkins Square Branch Library, 331-333 E. 10th St., Manhattan Boro. Plans deposit $10.

N. J., Pennsauken—SERVICE AND STORAGE—Bids Asked —Samuel J. Korman, 6401 Castor Ave., Phila., Pa., service and storage, $110,000. Faint & D'Anastasio, 5521 Westfield Ave., Pennsauken, N. J., archts.

HEAVY CONSTRUCTION—LB & CA

▲† **Raymond International Inc.,** 140 Cedar St., New York, N. Y., **Henry J. Kaiser Co.,** 1924 Broadway, Oakland 12, Calif., **Macco Corp.,** 14409 S. Paramount Blvd., Paramount, Calif. and **Puget Sound Bridge & Dredging Co.,** 2929 16th Ave. S.W., Seattle, Wash., CA $24,408,000, 12 Atlas Missile Launching Sites, Ausable Forks, Champlain Chazy, Clayburg, Ellenburg, Mooers Forks, Willsboro, Bouquet, Sugar Bush and Harrigan Corners, N. Y. and Swanton and Elburg, Vt. near Plattsburgh Air Force Base. NEW YORK and VERMONT. U.S. Eng., 111 E. 16th St., New York 3, N. Y. CD 6/15, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Terry Contg. Inc., 11-11 34th Ave., Long Island City 6, N. Y., CA $1,959,855 est. $2,170,000, aluminum mall fencing, guide railing, misc. work 34.92 mi. Belt Parkway (Gowanus Parkway to Whitestone Parkway) Van Wyck Expressway (Belt Parkway to Grand Central Parkway) Rtes. 27 & 27A. FABLP 60-1-FAVWE 60-1, Kings, Nassau and Queens Counties. Bids May 12. CD 5/13, under LB.

Zazzarino Constr. Corp., 540 Faile St., New York 59, N. Y., LB $209,979, (7 bidders), Contr. 806, replacement relief sewer, E. 120th St. from 1st Ave. to sanitary regulator, Franklin D. Roosevelt Dr., NEW YORK, N. Y. President Manhattan Boro, Rm. 2034, Municipal Bldg., New York 7, N. Y. Bids June 10. CD 6/3.

Taylor & Gaskin, Inc., 644 Mack St., Detroit, Mich., CA $250,000, airport experimental radar and facilities, Atlantic City Airport, ATLANTIC CITY, N. J. W. L. Maxon Corp., 475 10 Ave., New York, N. Y., Strobel & Rongved, 70 W. 40 St., New York, N. Y., engrs.

Ed. Lord, Inc., 6219 Crescent Blvd., Pennsauken, N. J., CA $163,675, sewage treatment plant, pumping station and service mains, MORRISTOWN, N. J., Cromwell Hills Utility Co., c/o Advertising Arts, 1775 Broadway, New York, N. Y., Walter Pfeiffer, 109 Washington St., Morristown, N. J., archt. Lanning Sanitary Engr. Co., 1100 South Broad St., Trenton, N. J., engr.

Brann & Stuart, P.O. Box 998, Trenton, N. J., CA $744,422, earthwork, grading, paving and drainage, River Rd. approach to Tacony-Palmyra Bridge, PALMYRA, N. J. Burlington Co. Bridge Comrs., Palmyra, Pa., L. B. Steinman, 117 Liberty St., New York, N. Y., engr. CD 4/3/59.

State Paving & Constr. Co., 69 and Kingsessing Ave., Phila. 42, Pa., CA $207,595, Bids No. 2551, mechanical piping for Sludge Lagoon E, appurtenant work at Southwest Treatment Works, PHILA., PA. Procurement Dpt., Room 313, City Hall Annex, Phila., Pa. Bids June 2. CD 5/24.

James D. Morrissey, Inc., 9119 Frankfort Ave., Phila. 14, Pa., CA $117,112, Bid No. 3753, imprv. and wid'n. Wissahickon Ave. from Hunting Park Ave. to Roberts Ave., PHILA., PA. Procurement Dpt., Room 313, City Hall Annex, Phila., Pa. Bids May 26. CD 5/11.

Eastern Asphalt Co., Suite 1505, No. 2 Penn Center Plaza. Phila. 2, Pa., CA $308,031, Bid No. 3752, imprv. Academy Rd. from Red Lion Rd. to Alta Place, incl. grading, bit. concrete paving, sewer, water main (Phila., Pa.).

MARYLAND — State Rds. Comn., 300 W. Preston St., Baltimore, Zone 2,
Princemont Constr. Co., Rockville, Md., CA $584,423, grading, drainage and surf. 0.66 mi. US 29 dual hy., incl. wid'n. existing bridge over Northwest Branch near Silver Spring, M 531-5-320 & M-531 10-320, Montgomery Co. Bids May 17. CD 5/26, under LB.

Wright Contracting Co., Odenton, Md., LB $259,328, Contr. 2432-S, sewer, Rock Creek and Mill Creek Interceptor sewers from Crabbs Branch to Redland Rd., Gaithersburg, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids June 13. CD 5/25.

W. F. Wilson & Sons, Inc., Brookville, Md., LB $127,987 (11 bidders) Contr. 2339-S, Mill Creek Interceptor Sewer from Redland Rd. to Washington Grove, Gaithersburg (Hyattsville, Md.).

BUILDINGS—LB & CA

▲ **Crow-Barney Constr. Co.,** 101 Park Ave., New York 17, N. Y., CA Approx. $6,400,000, 14 story OFFICE, 195 Montague St., BROOKLYN, N. Y. Brooklyn Union Gas Co., 176 Remsen St., Brooklyn 12, N. Y. Bids May 17. CD 5/11.

▲ **Green Constr. Corp.,** 274 Madison Ave., New York, N. Y., LB $1,507,250 (9 bidders) SENIOR HIGH SCHOOL, LEVITTOWN, N. Y. Bd. Educ., Unif. Free School Dist. No. 5, Town of Hempstead, Hempstead, N. Y. Bids June 7. CD 5/13.

Mars Assocs. Inc., and **Normel Constr. Corp.,** 271 Church St., New York 13, N. Y., LB $796,000 (10 bidders) ADMINISTRATION BLDG. City College, NEW YORK, N. Y. Bd. Higher Education, City College, Business Office, Brett Hall, 136 St. and Convent Ave., New York 31, N. Y. Bids June 14. CD 5/11.

Willard Dunhan, 305 Kimball St., Woodbridge, N. J., CA est. $400,000, SCHOOL, Roosevelt Ave., CARTERET, N. J., Diocese of Trenton, Parish St. Joseph, Locust Ave., Carteret, N. J., Thomas Moran, 549 Jefferson Rd., Princeton, N. J., archt.

Portland Gardens, Inc., Portland Ave., Fanwood, N. J., Owner Builds, $450,000, 25 HOUSES, North Orchard St., EDISON, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., and Rotwein & Blake, 1018 Stuyvesant St., Union, N. J., archts.

Donald Aronow, 1441 Morris Ave., Union, N. J., CA $400,000, 30-family, APARTMENT, Irvington Ave., ELIZABETH, N. J. Adma Corp., 1441 Morris Ave., Union, N. J., Gerber & Pancani, 11 Commerce St., Newark, N. J., archts.

Joseph D'Amiano, c/o Arnold Kent, 1060 Broad St., Newark, N. J., Owner Builds, $700,000, 27 HOUSES, Davjo Dr., HILLSIDE, N. J.

Washburn Builders, Inc., Yardley, Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Lower Makefield Twp., Keats Rd., MORRISVILLE, PA., Frederick L. Lantz, Morrisville, Pa., archt.

Louis Hankin, Western Savings & Fund Bldg., Broad and Chestunt Sts., Phila., Pa., Separate Contracts, $115,000, MFG. PLANT, 8000 National Highway, PENNSAUKEN, N. J., Hassinger & Schwam, 27 Maplewood Ave., Phila., Pa., archts.

Iles & Shimp, Elmer, N. J., Separate Contracts, $200,000, AUTOMOBILE SHOWROOM AND SHOP, PITTSGROVE, N. J.

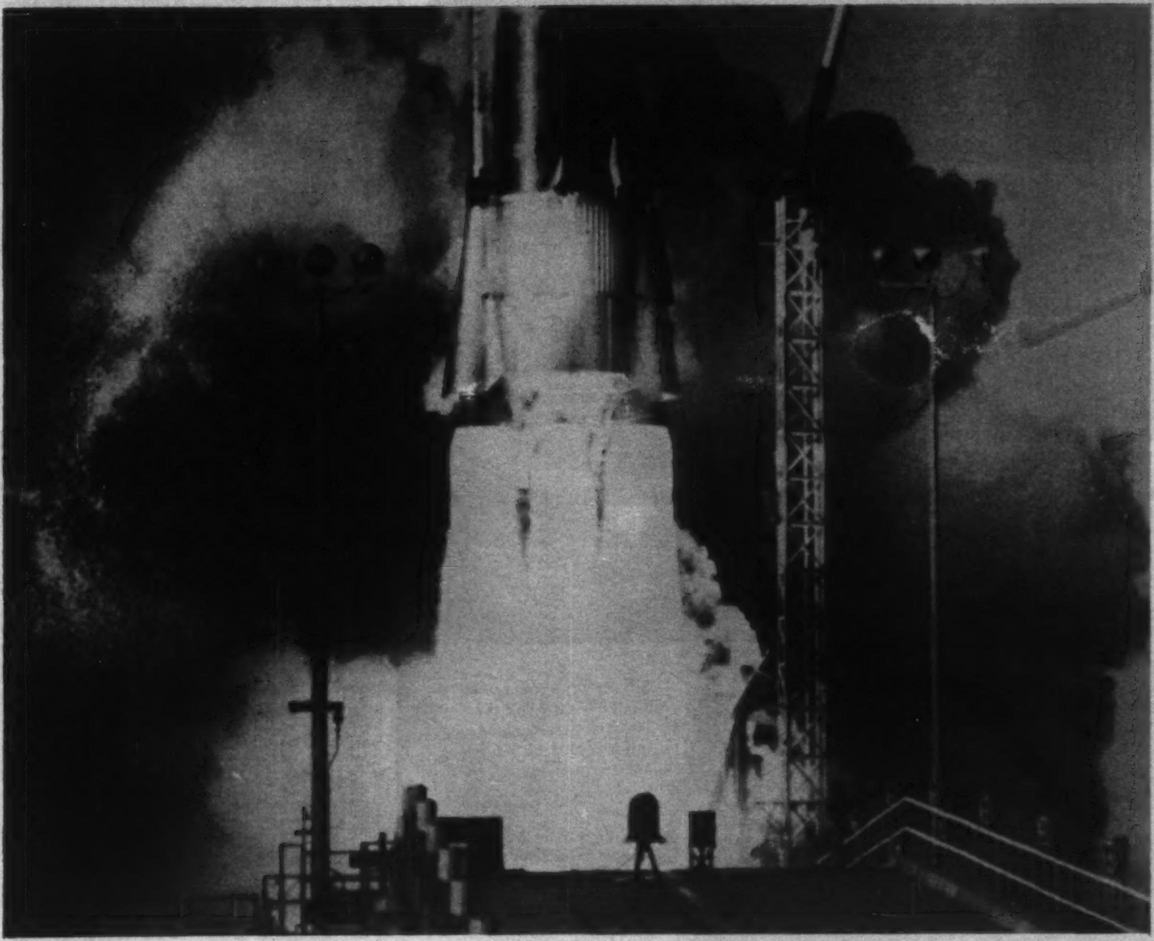
Erwin Fisch, U. S. Hy. 22, Scotch Plains, N. J., Owner Builds, $700,000, 21 HOUSES, Mair Lane, SCOTCH PLAINS, N. J.

Fairfield Manor, c/o Jas. J. Abbott & Co., 440 E. State St., Trenton, N. J., Owner Builds, $450,000, 26 HOUSES, Edinburg Rd., TRENTON, N. J., Franklin B. Spiezle, 11 North Willow St., Trenton, N. J., archt.

Phila. Chewing Gum Corp., 861 N. Eagle Rd., Havertown, Pa., Separate Contracts, $110,000, 2 story, 60 x 100 ft. and 180 x 220 ft., masonry, L-shaped WAREHOUSE, HAVERTOWN, PA.

Philmont Pressed Steel Co., Inc., Huntingdon Valley, Pa., Separate Contract, $110,000, 10,000 sq. ft. masonry and steel INDUSTRIAL ADDN., HUNTINGDON VALLEY, PA., Hassinger & Schwam, 27 Maplewood Ave., Phila., Pa., archts.

Stanley M. Horn, 15 S. 6 St., Perkasie, Pa., Separate Contract, $400,000, RESIDENTIAL DEVELOPMENT, Virginia Ave., etc., PERKASIE, PA.



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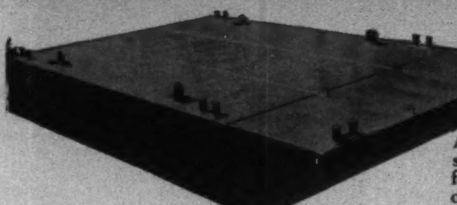

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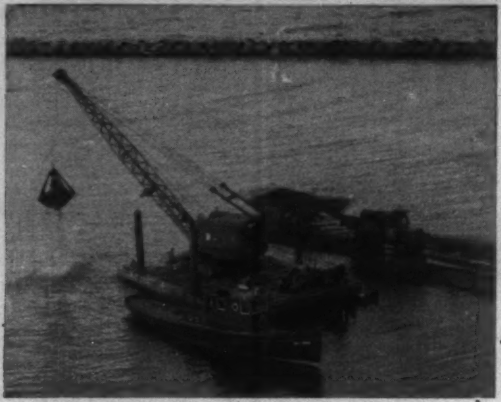

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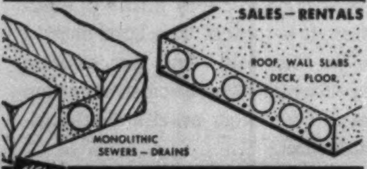
SALES—RENTALS



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CIRCLE 37 ON READER SERVICE CARD

Orleans Constr. Co., 100 W. Rockland St., Phila., Pa., Separate Contracts, **$400,000**, RESIDENTIAL DEVELOPMENT, Griffith St., etc., PHILA., PA.

Christian Gigliotti, 9140 Verree Rd., Phila., Pa., Separate Contracts, **$400,000**, RESIDENTIAL DEVELOPMENT, Red Rambler Terrace, etc., PHILA., PA., Zell Bender, 225 N. 6 St., Camden, N. J., archt.

Jules Segal & Son Constr. Co., Inc., 1643 Old York Rd., Abington, Pa., CA est. **$110,000**, 1 story, masonry and steel FOOD PROCESSING PLANT for Luzerne Enterprises, PHILA., PA., Sabatino & Fishman, archts., 116 S. 19 St., Phila., Pa., Bids May 26. CD 5/26.

Daniel J. Keating Co., 3917-27 Baring St., Phila. 4, Pa., CA **$506,284**, Bid. No. 4301, air-conditioning, heating and ventilating for POLICE ADMIN. BLDG., 7, 8, Race, Cherry Sts., PHILA., PA., Procurement Dpt., 302 City Hall Annex, Phila. 7, Pa., Bids Apr. 4. CD 4/21, under LB.
McGee Electric Co., 99 West Ave., Jenkintown, Pa., CA **$471,100**, Bid. No. 4302, electrical work for Police Admin. Bldg., (Phila., Pa.).

▲ **Daniel B. Van Campen Corp.**, 2540 W. Oxford Ave., Phila., Pa., CA **$1,027,818**, junior high SCHOOL, Woodland Ave., SPRINGFIELD, PA. Springfield Twp. School Dist. Auth., Springfield, Pa. Bids Apr. 19. CD 5/2, under LB.

▲ **George K. Heebner, Inc.**, 1231 Vine St., Philadelphia, Pa., CA **$2,000,000**, PLANT, WILMINGTON, DEL. Bestwall Gypsum Co., Ardmore, Pa. Johnson & Johnson, 22 W. Madison St., Chicago, Ill., archt.-engrs. CD 12/31/58.

Allis-Chalmers Mfg. Co., 1126 S. 70th St., Milwaukee, Wis., CA est. **$147,335**, TRAINING and RESEARCH REACTOR, COLLEGE PARK, MD. Maryland University, College Park. Md.

▲ **John Tester & Sons**, Ft. Meade Rd., LB **$1,483,861**, (14 bidders), CARTOGRAPHIC ENGINEERING, Army Map Service, WASH., D. C., U. S. Eng., 1st and Douglas Sts. NW, Wash., D. C., Bids June 14. CD 5/24.

Standard Constr. Co., 1000 Connecticut Ave. NW, Wash., D. C., CA est. **$300,000**, 5 story, masonry, steel GARAGE, 1100 18th St. NW, WASH., D. C. Charles I. Kaplan, Alfred Bennett, Bernard Gerwiz, 1000 Connecticut Ave. NW, Wash., D. C., Corning & Moore, 1302 18th St. NW, Wash., D. C., archts.

Prescott Constr. Co., Inc., 1307 West St. N.W., Wash., D. C., CA est. **$225,000**, 1 story, steel, frame WAREHOUSE, 1435 New York Ave. NE, WASH., D. C. The May Dpt. Stores Co., (The Hecht Co.), 7th and F Sts. NW, Wash., D. C. Edwin Harris, Jr., 630 3rd Ave., New York, N. Y., archt.

W. M. Chappell Inc., 1346 Good Hope Rd. SE, Wash. 20, D. C., CA **$618,800**, Rudolph Elementary SCHOOL addn., Ingraham and 2nd Sts. NW, WASH., D. C. D. C. Govt. Dpt. Bldgs & Grounds, 499 Pa. Ave. NW, Wash., D. C. Bids May 27. CD 6/3, under LB.

Donald A. Hay Inc., 1625 Kalmia Rd., NW, WASH., D. C., Owner Builds, **$450,000**, 3 story, brick, steel, concrete APARTMENT, 3737 Legation St. N.W., WASH., D. C.

▲ **Geo. F. Driscoll Co. and Moccia Constr. Corp.**, 41 E. 42nd St., New York 17, N. Y., CA **$7,395,598**, fdns. and general contract LAFAYETTE HOUSES Proj. NY-5-47, DeKalb, Franklin, Lafayette and Classon Aves., Brooklyn Boro, BROOKYLN, N. Y. New York City Housing Auth., Purchase Div., Rm. 1002, 299 Broadway, New York 7, N. Y. Bids May 24. Grand total $9,708,338. Awarded June 10. CD 5/26, under LB.
Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y., CA **$767,000** heating and ventilating for Lafayette Houses (Brooklyn, N. Y.);
Herman H. Schwartz, Inc., 97-11 Sutphin Blvd., Jamaica 35, N. Y., CA **$577,740**, electrical work for Lafayette Houses (Brooklyn, N. Y.);
Forsythe Plumbing & Heating Corp., 234 W. 55th St., New York 19, N. Y., CA **$968,000**, Plumbing for Lafayette Houses (Brooklyn, N. Y.).

▲ **Turner Constr. Co.**, 150 E. 42nd St., New York 17, N. Y., CA est. **$25,000,000**, 37 story OFFICE and APARTMENT, E. 48th St., E. 49th St., First Ave. and F. D. R. Drive, NEW YORK, N. Y. Webb & Knapp, Inc., 270 Park Ave., New York 17, N. Y. Harrison & Abramovitz, 630 Fifth Ave., New York 20, N. Y., archts. CD 6/24.

▲ **Geo. A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA est. **$6,000,000**, 6 story, marble and glass LIBRARY, East 42nd St. and 1st Ave., NEW YORK, N. Y. United Nations, East 42nd St. and 1st Ave., New York, N. Y. Harrison & Abramovitz, 630 5th Ave., New York, N. Y., archts. CD 10/2.

▲ **Geo. A. Fuller Co.**, 597 Madison Ave., New York 22, N. Y., CA est. **$3,400,000**, 17 story NURSES RESIDENCE for hospital, 425-35 East 66th St. and 1231-41 York Ave., NEW YORK, N. Y. Memorial Center for Cancer & Allied Diseases, 444 E. 68th St., New York 21, N. Y. Harrison & Abramovitz, 630 Fifth Ave., New York 20, N. Y., archts. CD 7/10/59.

▲ **Leonard Shaffer Co.**, 207 S. 24 St., Phila., Pa., CA $1,000,000, MOTEL, PHILA., PA., Crossway Motor Motel, Inc., c/o Stanley Store, Scarsdale, N. Y., CD 3/16.

▲ **A. J. Hertweck Assoc.**, 8121 Rowland Ave., Phila., Pa., CA **$1,300,000**, APARTMENT, Welsh Rd. and Dewees St., PHILA., PA., Owner, c/o general contractor, Oscar Udell, 8121 Rowland Ave., Phila., Pa., archt.

Hooper Constr., 4620 Lee Highway, Arlington, Va., CA est. $400,000, Eden Roc COUNTRY CLUB, swimming pool, PITTSBURGH, PA., Country Club Developer, 760 Warner Bldg., Wash., D. C. Vosbeck & Ward, 610 Madison St., Alexandria, Va., archts.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Key West**—PAVING—BA 6/28—Officer in Charge of Constr., Key West Naval Air Station, b. conc. paving streets, other areas, under $25,000.

† **Georgia**—BA 6/28—U. S. Eng., 200 E. St. Julian St., P.O. Box 889, Savannah, dredging, bank revetment Savannah River below Augusta, CIVENG 09-133-60-40. $600,000. CD 6/2.

† **Fla., Cocoa**—ROAD—BA 6/28—U.S. Eng., 575 Riverside Ave., Jacksonville, road around impact pit Air Force Missile Test Center, Patrick Air Force Base, ENG-08-123-60-80. CD 6/4/59.

† **Fla., Jacksonville**—RECEIVING FACILITY—BA 6/28—Officer in Charge of Constr., Jacksonville Naval Air Station, receiving facility for Aircraft Engines Bldg. 101, Jacksonville Naval Air Station, NBy 33162, Spec. 33162/60, $10,000-$25,000.

† **Fla., Jacksonville**—CYLINDER SHOP—BA 6/28—Officer in Charge of Constr., Jacksonville Naval Air Station, modernizing cylinder shop 6233, Jacksonville Naval Air Station, NBy 31248, Spec. 31248/60, $10,000-$25,000.

† **Fla., Milton**—AIR CONDITIONING—BA 6/28—Officer in Charge of Constr., Naval Air Basic Training Command, Bldg. 45, Naval Air Station, Pensacola, air conditioning Bldg. Nos. 1407 and 1423, Naval Auxiliary Air Station, Whiting, NBy 28881, Spec. 28881/60, $25,000-$100,000. CD 9/25.

† **La., New Orleans** — AIR CONDITIONING, etc. — BA 6/28—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U.S. Naval Station, New Orleans (Algiers), La., air conditioning and partitions Bldg. 117, Naval Station, Alvin Callender Field. NBy-30444, Spec. No. 30444/60. Under $25,000.

† **La., New Orleans** — TRANSPORTATION FACILITY ADDN.—BA 6/28—Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16, U.S. Naval Station, New Orleans (Algiers), La., transportation facility addn., Naval Air Station, Alvin Callender Field, NBy 26005, Spec. 26005/59. $25,000-$100,000.

† **Va., Dam Neck** — BLDG. ALTERATIONS, etc. — BA 6/28—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, U.S. Naval Base, Bldg. No. 523 alterations, Fleet Air Defense Training Center, Virginia Beach, Contr. NBy-30652, Spec. No. 30652/60. Under $25,000; support for SINS, Contr. NBy 30653, Spec. No. 30653/60. Under $10,000.

† **Va., Norfolk**—DISPOSAL DPT. OFFICES ADDN.—BA 6/28—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, U.S. Naval Base, disposal dpt. offices addn., SDA-224, Naval Supply Center, Contr. NBy-30664, Spec. No. 30664/60. CD 9/11/58.

† **Va., Norfolk** — MAGNETIC PROVING GROUND REPAIRS, etc.—BA 6/28—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, U.S. Naval Base, repairing magnetic proving ground, Naval Degaussing Station, Naval Base, Contr. NBy-30665, Spec. No. 30665/60. $25,000-$100,000; Bldg. L-30 alterations. Contr. NBy-30650, Spec. No. 30650/60. Under $25,000. CD 9/8/58.

North Carolina—BA 6/28—McDowell Co. Comrs., Comrs. & Accountants Office, County Courthouse, Marion, one floodwater retarding structure, earthfill embankment, appurtenances, Site No. 19, Muddy Creek Watershed, approx. 1½ mi. west of Dysartsville, McDowell Co., Inv. MC 2. CD 3/22.

† **S. C., Charleston**—EQUIPMENT DECONTAMINATION FACILITY—BA 6/28—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., equipment decontamination facility, Charleston Naval Shipyard, U. S. Naval Base, NBy 31339, Spec. 31339/60. $25,000-$50,000. CD 9/10/58.

† **Va., Norfolk**—LIGHTING—BA 6/28—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, U. S. Naval Base, lighting, Bldg. W-143, Naval Supply Center, Contr. NBy 30655, Spec. No. 30655/60. $25,000-$100,000. CD 8/18/52, under Public Buildings.

† **Fla., Key West**—SEADROME LIGHTING VAULT etc.—BA 6/28—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13 US Naval Base, Charleston, S. C., seadrome lighting vault and Seadrome Lighting cable runs alterations, US Naval Air Station, Seaplane Base, NBy 31205, Spec. 31205/60, under $25,000.

† **Ga., Athens**—AIR CONDITIONING—BA 6/28—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, US Naval Base, Charleston, S. C., air conditioning Bldgs. 2 and 9, US Navy Supply Corps School, NBy 31368, Spec. 31368/60, $25,000-$100,000.

▲ **N. C., Henderson**—PLANT—BA 6/28—J. P. Taylor Tobacco Co., 201 S. 3rd St., Richmond, Va., 160,000 sq. ft. tobacco processing plant, $1,500,000. Extended date. Hinnant, Addison & Hinnant, 517 Church St., Lynchburg, Va., archts. CD 4/6.

† **S. C. Charleston**—COMMISSARY STORE addns. etc.—BA 6/28—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., commissary store addn., Bldg. 1198, U. S. Naval Base. NBy-2911 Spec. 29111/60. $25,000-$100,000. CD 9/17/51.

† **Va., Norfolk**—ADDNL. COMMUNICATION FACILITIES—BA 6/28—Dist. P. Wks. Office, Fifth Naval Dist., Room 307, Bldg. N-26, U. S. Naval Base, addnl. communication facilities, Naval Communication Station, Contr. NBy-30497, Spec. No. 30497/60. $250,000-$500,000. CD 9/28.

† **Tenn., Johnson City**—U. S. MARINE CORPS RESERVE TRAINING CENTER—BA 6/29—Dist. P.

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Wks. Office, Sixth Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., U. S. Marine Corps Reserve Training Center, NBy-25446, Spec. 25456/59. $250,000-$500,000.

† Fla., Key West—AIR CONDITIONING—BA 6/29—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, US Naval Base, Charleston, S. C., air conditioning various bldgs., US Naval Air Station, NBy 29128, Spec. 29128/60. $25,000-$100,000.

† S. C., Charleston—OPEN SHED—BA 6/29—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. 13, U.S. Naval Base, Charleston, S. C., open shed addn. U.S. Naval Ammunition Depot. NBy-33211, Spec. 33211/60. Under $10,000.

† Fla., Key West—BUILDING REHAB.—BA 6/29—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., rehab. Bldgs. 6, 27, 37, 61, 131 and 132, NBy 29050, Spec. 29050/59, $25,000-$100,000.

† Fla., Key West—BUILDING REHAB.—BA 6/29—Dist. P. Wks. Office. 6th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., rehab. Bldgs. 712, 718, 624 and 625, U. S. Naval Air Station, NBy 31204, Spec. 31204/60. $25,000-$100,000.

† S. C., Charleston—POLARIS MISSILE ASSEMBLY FACILITY MODIFICATIONS, etc.—BA 6/29—Dist. P. Wks. Office, Sixth Naval Dist., Naval Base, Charleston, S. C., Polaris Missile Assembly Facility modifications to existing bldgs., 800 sq. ft. prefabmetal bldg., 400 sq. ft. open shelter, concrete walks, pavt., etc. Naval Weapons Annex, Naval Ammunition Depot, North Charleston, NBy 33207. $100,000-$250,000. CD 7/30/58.

† S. C., Charleston—RUNWAY OVERRUN—BA 6/30—U.S. Eng., 209 King St., Charleston, runway overrun, Charleston Air Force Base. ENG-38-081-60-10. $200,000. CD 5/2, under LB.

† Fla., Mayport—OUTDOOR RECREATIONAL FACILITIES—BA 6/29—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, US Naval Base, Charleston, S. C., recreational facilities, one lighted and two unlighted softball diamonds, two volleyball courts, one basketball court, two tennis courts, sanitary sewers, water system extensions. Extended date. CD 5/24.

▲ ALABAMA—BA 6/30—State Hy. Dpt., Montgomery, Zone 4,
Cullman Co.—bridge 0.057 mi. over Crooked Creek between Crane Hill and Winston Co. line SW of Cullman.
bridge 0.069 mi. over Ryan Creek between Trimble and Loretto SW of Cullman.
Dallas Co.—bridge 0.05 mi. over Valley Creek between county Rd. 37 and Ala. 27 N. of Selma.
Geneva Co.—approaches 0.567 mi. at Double Bridges Creek on revision of Ala. 52 at Geneva.
Jefferson Co.—bridge and approaches 0.974 mi. at Cahaba River near Grants Mill SE of Irondale.
Macon and Montgomery Counties—bridges 0.207 mi. from Mount Meigs to Tysonville on Interstate Rte. 85.
Perry Co.—removal of structures on road from Uniontown NE to Ala. 5.
Talladega Co.—bridge 0.057 mi. over Tallaseehatchee Creek on Oldfield-Sycamore Rd. NE of Sylacauga.
Walker Co.—bridge culvert 0.008 mi. at Poley Creek E. of Jasper.
Wilcox Co.—culverts 0.011 mi. on road from Ala. 164 W. of Camden N. to Ala. 28.

▲ ALABAMA—BA 6/30—State Hy. Dpt., Montgomery, Zone 4,
Autauga Co.—base and bit. 5.501 mi. from US 31 at Myrick Chapel E. to Elmore Co. line.
Bullock Co.—bit. 26.389 mi. on various county roads.
Calhoun and Etowah Counties—grading, draining and bit. paving 6.316 mi. US 431 from point near Calhoun-Etowah line N.W. toward Gadsden.
Cherokee Co.—stockpiling base materials for roads near Cedar Bluff and Centre.
Conecuh and Escambia Counties—base and bit. paving 11.966 mi. from Escambia Co. Rd. 40 to Conecuh Co. Rd. 6 N.W. of Castleberry on Interstate Rte. 65.
Conecuh Co.—base and bit. 7.992 mi. on road from US 31 S. of McKenzie N.W. toward Owassa, incl. spur.
grading, draining and bit. 3.686 mi. from County Rd. 23 at Daws Store N.E. to US 31.
DeKalb Co.—base and concrete paving 5.789 mi. from Ala. 35 W. of Fort Payne N.E. to US 11 on Interstate Rte. 59.
Escambia Co.—base and bit. paving 12.668 mi. from Ala. 21 N. of Atmore, N.W. to Escambia Co. Rd. 40 on Interstate Rte. 65.
Geneva Co.—bit. 31.454 mi. on various county roads.
Houston Co.—base and bit. 19.21 mi. on various county roads.
Jefferson and St. Clair Counties—base and bit. paving 8.279 mi. from Red Diamond Mines E. to Brompton on Interstate Rte. 20. CD 5/27/59.
Jefferson Co.—grading, draining 2.203 mi. on road from Graysville N.E. to Flat Top. CD 5/27/59.
Lamar and Marion Counties—grading, draining 10.574 mi. on road from Hamilton S.W. to Detroit.
Lee Co.—base and bit. 6.941 mi. on Reeder, Hunter and Chicken Farm Rds.
centerline striping 89.461 mi. on various county roads.
bit. and plant mix 36.017 mi. on various county roads.
Macon Co.—grading, draining and paving 3.571 mi. from Tysonville to Shorter, on Interstate Rte. 85.
Madison Co.—grading, draining and bit. paving 0.453 mi. and bridge for interchange on US 231 at W. Clinton St., Huntsville. CD 2/23.
Marengo Co.—grading, draining 4.903 mi. Co. Rd. 17 between Sweetwater and Marengo.
Mobile Co.—grading, draining and bit. 1.55 mi. and bridge on division of county Rd. 41 W. of Saraland.
Perry Co.—base and bit. 3.537 mi. on county Rd. 23 from Ala. 183 N. to Scott Station.
Pike Co.—base and bit. 3.166 mi. on road from Ala. 130 E. of Shiloh N. of county Rd. 93.
bit. 11.725 mi. on various county roads.
Tuscaloosa Co.—base and bit. 5.966 mi. on county road from Morman Rd. E. to US 43.
base and bit. 1,877 mi. on road from Ala. 69 N. of Northport E. to county Rd. 47.
Winston Co.—grading, draining and bridge 6.528 mi. on road from point N. of Ala. 195 near Rabbit Town E. toward Grayson.

† Fla., Cocoa—TRANSFER FACILITIES—BA 6/30—U. S. Eng., 575 Riverside Ave., Jacksonville, transfer facilities for Mobile Minuteman, Air Force Missile Test Center, Patrick Air Force Base, ENG-08-123-60-81B. Bids June 30. CD 6/8.

▲† Tenn., Tullahoma—LABORATORY, etc.—BA 6/30—U. S. Eng., Arnold Air Force Station, Tullahoma, laboratory, tunnel, roads, paving, grading, utilities and electrical distrib. sys. Arnold Engineering Development Center, Arnold Air Force Station, ENG-40-1126-60-16. $2,000,000. Plans deposit $5. CD 9/28/59.

Fla., Clearwater—POLICE HEADQUARTERS AND JAIL—BA 6/30—City, City Hall, police headquarters and jail $500,000. K. W. Dalzell Jr., 300 S. Garden St., archt. CD 10/16.

Ga., Young Harris—DORMITORIES—BA 6/30—Young Harris College, Young Harris, two, 40,000 sq. ft. student dormitories. $500,000. Plans deposit $50. Linton H. Young, 1129 Candler Bldg., Atlanta, archt. CD 1/12.

KENTUCKY—BA 7/1—Commonwealth of Kentucky, Dpt. Hys., Frankfort,
Henderson Co.—c. conc. pavement 2.899 mi. Henderson-Evansville Rd. at US 41 & US 641 near northeast limit of Henderson, interchange with US 41, US 641 and US 60 extending southwesterly to point 0.66 mi. NE My. 812. U 51 (13), SP 51-19 & SP 59; U 526 (23) SP 51-299; FG 526 (15), SP 51-299, F 526 (14), SP 51-299.
Logan Co.—bit. surf. Class I, 2.9 mi. Anderson Store Rd. from end of blacktop near Gupton Grove Church to Jct. Ky. 1463. RS 71-651.
bit. surf. Class I, 2.1 mi. Lewisburg-Deerlick Rd. 3 mi. NW of Jericho to Todd County Line, RS 71-721.
bit. surf. Class I, 2.321 mi. Schochoh-Neosheo Rd. from Jct. Corinth-Schochoh Rd. in Schochoh to Simpson County Line. RS 71-581.
bit. surf. Class I, 4.5 mi. Cave Springs-Lickskillet-Ky. 102 Road from bridge over Whippoorwill Creek at Lickskillet to Jct. Ky. 102. 0.7 mi. east Todd County Line. RS 71-701,
bit. surf. Class I, 4.955 mi. Adairville-Schley Rd. from west corporate limit of Adairville to Jct. Ky. 96, 6 mi. north of Keysburg. RS 71-441,

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bit. surf. Class I, 2.975 mi. Green Ridge-Spa Rd. from jct. Ky. 178, 0.7 mi. east of Todd County Line. RS 71-521,

bit. surf. Class I, 3.084 mi. Lewisburg-Deerlick Rd. from NW end of Wolfe Creek Bridge 1.7 mi. NW of jct. US 431 to end of blacktop 3 mi. NW of Jericho, RS 71-721,

bit. surf. Class I, 2 mi. Epley Station-Stuarts Chapel Rd. from jct. US 431, Epley to Lick Creek Bridge. RS 71-601,

bit. surf. 2.516 mi. Anderson Store Rd. from jct. Ky. 105, 1 mi. south of Pauline to near Gupton Grove Church. RS 71-651,

bit. surf. Class I, 2.095 mi. Gavett Store-Morgantown Rd. from 2.4 mi. NE of jct. with Ky. 105 to jct. Ky. 103, 5 mi. north of Auburn. RS 71-931. Plans deposit $2. each.

† **West Virginia**—BA 7/1—Soil Conservation Service Office, 178 Forest Ave., Morgantown, earthfill floodwater retarding structure and appurtenances on Spring Run, Site No. 11, South Fork Flood Prevention Program, N.E. of Brandywine, Inv. SCS-8-WVa-60.

† **Miss., Biloxi**—AIRMAN DORMITORIES—BA 7/5—Base Procurement Office, Kessler Air Force Base, Biloxi, Miss., modernization 60, B-63 type airman dormitories, Kessler Air Force Base, IFB 22-600-60-90. CD 2/7/51.

▲† **S. C., Charleston**—HOUSING—BA 7/6—U. S. Air Force Military Air Transport Service, Scott Air Force Base, Ill., 350 units Capehart Housing. Charleston Air Force Base, Inv. 11-626-60-11. Extended date. $5,600,000. Plans deposit $200. Lyles, Bissett, Carlisle & Wolff, 1800 Geravis St., Columbia, S. C., archts. CD 6/3.

N. C., Albemarle—BA 7/7—City, City Hall, water filtration plant and concrete reservoir, $750,000. Pierson & Whitman, 1618 Glenwood Ave., Raleigh, engrs. CD 11/10.

† **Louisiana**—BA 7/7—U. S. Eng., foot of Prytania St., New Orleans, minor repairs to revetments, Mississippi River between Gibson Landing, La. (Mile 370 AHP) and White Castle, La. (Mile 190 AH) and Atchafalaya River between Mile 1 and Mile 6, CIVENG-16-047-60-224. $100,000. Plans deposit $1. CD 9/23/58.

† **Louisiana**—BA 7/7—U. S. Eng., P. O. Box 60, Vicksburg, Miss., 277,000 cu. yd. of levee embankment, one drainage structure, Marshall Bend Levee Extension, Item O.R. 108.5-L, east bank of Ouachita River, Caldwell Parish. $25,000-$75,000. Plans deposit $3.

South Carolina—TRANSMISSION LINES, etc.—BA 7/7—Edisto Electric Coop., Bamberg, S. C., 8.7 mi. 69 KV transmission lines and three substations, Bamberg and Allendale Counties. $100,000. Plans deposit $10. McCall-Thomas Engrg. Co., 941 Broughton St., S.E., Orangeburg, S. C., engr. CD 10/22/59.

† **West Virginia**—BA On Or About 7/7—U. S. Eng., 502 8 St., Huntington, dredging lock approaches and areas behind lock walls at London and Marmet Locks, Kanawha River, CIVENG-46-022-60-90. Under $25,000.

† **Tennessee**—BA 7/8—Jennings Creek Watershed Dist., R.F.D. 1, Whitleyville, Tenn., one floodwater retarding structure, earthfill embankment, site 15, Jennings Creek Watershed, 3 mi. west of North Springs, State Hy. 56 near Jackson and Macon County Line.

† **Mississippi**—BA 7/12—U. S. Eng., P. O. Box 60, Vicksburg, Miss., Lower Auxiliary Channel, Item LAC-29, 4,136,000 cu. yd. floodway channel excav. 2,200,-000 cu. yd. levee embankment, etc. Humphreys Co. $500,000-$1,000,000. Plans deposit $9.50.

† **Louisiana**—BA 7/13—U. S. Eng., P. O. Box 267, New Orleans, jetty repairs 1960, Belle Pass, Bayou LaFourche 13.5 mi. below Leeville. CIVENG-16-047-60-227. $75,000. Plans deposit $1.

† **Louisiana**—BA 7/14—U. S. Eng., P. O. Box 267, New Orleans, dredging 36 x 250 ft., Mississippi River-Gulf Outlet, Interim Channel from Bayou Dupre Sta. 683 plus 8 to Sta. 918 plus 00, St. Bernard Parish. CIVENG-16-047-60-228. $100,000. Plans deposit $1. CD 9/23/58.

† **Louisiana**—BA 7/19—U. S. Eng., P. O. Box 267, New Orleans, enlargement of levee with hydraulic material, WABPL, Item W-81.2, 8 mi. above Charenton Floodgate, St. Martin, Iberia and St. Mary Parishes. CIVENG-16-047-60-229. $100,000. CD 9/29/59.

La., Cullen—BA 7/8—Town, Webster Parish, Town Hall, (A) water distr. sys.; (B) 100,000 gal. elevated storage tank; (C) two 300 GPM deep water wells; (D) sewage collection sys.; (E) oxidation pond. Plans deposit $20 for parts A, B and C and $25 for parts D and E or $45 for complete project. J. S. Boyd & Assocs., 2026 DeSoto St., Shreveport, La., consult. engrs. CD 8/12/57.

La., Grambling—LIBRARY—BA 7/11—State Bd. Educ., State Capitol, Baton Rouge, 2 story, 57,600 sq. ft., rein.-con. frame, masonry library. Plans deposit $50. H. H. Land, 1104 Ouachita Bank Bldg., Monroe, La., archt.

▲† **Louisiana**—BA 7/14—U. S. Eng., P. O. Box 267, New Orleans, dredging 36 x 250 ft. Mississippi River-Gulf Outlet, Interim Channel from Bayou Dupre Sta. 683 plus 8 to Sta. 918 plus 00, St. Bernard Parish. CIVENG 16-047-60-228. $1,500,000. (Correction-cost). CD 6/15.

† **La., Alexandria**—INSTRUMENT LANDING SYS.—BA 7/19—U. S. Eng., 300 Broadway, Little Rock, Ark., instrument landing sys., England Air Force Base. ENG-03-050-60-60B. Plans deposit $10. CD 6/13.

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† **La., Alexandria**—ILS GLIDE SLOPE TRANSMITTER—BA About 7/19—U. S. Eng., 300 Broadway, Little Rock, Ark. Sched. A, ILS glide slope transmitter, wood frame emergency power bldg., etc., England Air Force Base, ENG-03-050-60-60. $188,000. Plans deposit $1. CD 9/25/59.

Ga., Tifton—SCHOOL—BA 7/21—Tifton Co. Bd. Educ., Courthouse, 100,000 sq. ft. Tift County High School, $750,000. William J. J. Chase & Assocs., Candler Bldg., Atlanta, archt. CD 3/1.

▲† **Fla., Key West**—HOUSING—BA 8/2—Dist. P. Wks. Office, 6th Naval Dist., Charleston, S. C., 500 unit Capehart Housing, Key West Naval Station. Norman M. Giller & Assocs., 1575 Washington Ave., Miami Beach, archts. CD 5/18 under LB.

▲† **Ala., Tuskegee** — HOSPITAL—BA 9/13—Veterans Admin., Munitions Bldg., Wash., D. C., VA hospital remodeling and addn., $1,500,000. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, archts. CD 10/5.

BUILDINGS—BA

N. C., Greenville—WRIGHT BLDG.—BA 7/12—East Carolina College, Wright Bldg. addn. Plans deposit $75. Allen J. Maxwell Jr., Purser Bldg., Goldsboro, archt. CD 6/16.

Fla., Tampa—RESIDENCE HALLS, etc.—BA 6/29—State Bd Control, County Courthouse, Tallahassee, residence halls-womens dormitory, University of South Florida, State Proj. 0853. F. M. Kelley Jr., 552 College Ave., Tallahassee, archt. Guy C. Fulton, Bldg. E, University of Florida, Gainesville and William F. Breidenbach, Box 9277, Tampa, assoc. archts. CD 6/8.

▲ **Fla., Miami**—NEWSPAPER PLANT—BA 7/12—Miami Herald Publishing Co., 200 S. Miami Ave., (selected list of bidders), 6 and 7 story, 290 x 621 ft., RIC and steel frame, concrete piling, concrete panels, marble facing newspaper plant, Bayshore Pl. and 13th St. Naess & Murphy, 1428 NE Bayshore Pl., and 224 S. Michigan Ave., Chicago, Ill., archt.-engrs. Jorgensen & Schreffler, 1200 SW 1st St., engrs. CD 10/27/58.

N. C., Greensboro—DORMITORY—Bids Asked—Bennett College, Macon St., dormitory, $400,000. Edward Loewenstein, 1030 E. Wendover Ave., archt.

HEAVY CONSTRUCTION—LB & CA

† **VIRGINIA and NORTH CAROLINA**—Bureau P. Rds., 920 S. Jefferson St., Roanoke,

Pioneer Constr. Co., P.O. Box 137, Roanoke, Va., CA **$305,633**, paving and other work from Rte. US 220, 14.47 mi. to Adney Gap Blue Ridge Parkway. Bids May 11. CD 4/19.

† **Pioneer Constr. Co.**, P.O. Box 137, Roanoke, Va., LB **$135,239** (6 bidders), 2 box culvert type park overpasses to carry parkway road over Sec. Rtes. 614 and 638, relocation of 2.486 mi. incidental roads, Blueridge Parkway, VIRGINIA. Bureau P. Rds., 920 S. Jefferson St., Roanoke, Va. Bids June 9. CD 5/24.

VIRGINIA—Dpt. Hys., 1221 E. Broad St., Richmond, Bids opened 6/8,

Va.—**The Via Co., Inc.**, 5200 Lakeside Ave., Richmond, Va., LB **$121,805**, grading, stabilizing and hard surf. 2.2 mi. Rte 604 from Rte. 677 west of Woodstock to Rte. 623 near Alonzaville, Shenandoah Co.;

Va.—**Ames & Webb, Inc.**, 3145 Virginia Beach Blvd., Norfolk, Va., LB **$164,878**, wid'n. to 4 lanes, curb, gutter and sidewalk 0.605 mi. Rte. 17 on Elm Ave. from High St. S. to County St., Jefferson Ave. and Lindsay Ave., Portsmouth;

Va.—**Kingsport Paving Co., Inc.**, Hy. 81, Kingsport, Tenn., LB **$93,500**, reconstr. and wid'n. 1.21 mi. Rte. 610 from east corporate limits of Big Stone Gap, east toward Norton, Wise Co.;

Va.—**Newton Asphalt Co., Inc.**, 2324 Mill Rd., Alexandria, Va., LB **$94,495**, bit. surf. 8.63 mi. Rte. 611 from Rte. 1 near Pohick to Rte. 644 near Pullmans store, Fairfax Co.;

Va.—**McAlister Constr. Co.**, RFD 5, Roanoke, Va., LB **$201,927**, grading and stabilized surf. 4.62 mi. Rte. 651, from Alt. US 58 at Banner Co. to Rte. 650 near Herald, Wise Co.;

Va.—**English Constr. Co., Inc.**, Main St., Box 191, Altavista, Va., LB **$271,556**, straighten and wid'n. 4.96mi. Rte. 24 from east of US 501 at Rustburg to east of Rte. 660 near N. and W. overpass, Campbell Co.

Va.—**General Outdoor Advertising Co., Inc.**, 110 E. 49 St., New York, N. Y., LB **$117,209**, permanent traffic signs Interstate Rte. 81 on Harrisonburg bypass, Rockingham Co.;

Va.—**McDowall & Wood**, 1308 Main St. W., Salem, Va., and **Robertson-Fowler Co.**, Buchanan, Va., LB **$430,444**, reconstr. and dividing bridge over flood control channel change of Peak Creek 1 mi. Rte. 99 from east of US Rte. 11 at Madison St. to east corporate limits, Pulaski;

Va.—**G. P. Clay**, 915 Green St., Richmond, Va., LB **$114,537**, wid'n. 0.339 mi. Rte. 161 on old divided section of Hermitage Rd. from Bellevue to Westbrook Ave. at Bryan Park, Richmond. CD 5/31.

† **VIRGINIA**—Bureau P. Roads, Dpt. Commerce, 1554 Columbia Pike, Arlington, Bids opened 6/9,

Case Constr. Corp., Mount Airy, Md., LB **$816,313**, (14 bidders), 2 structural steel girder bridges over Turkey Run and Dead Run, George Washington Memorial Parkway, Proj. 1A17, 1A18. Fairfax Co. CD 5/12.

▲† **S. J. Groves & Sons Co.**, P.O. Box 61, Camp Hill, Pa., LB **$1,845,028** (4 bidders), access highway Sect. 4 and related ramps and roads at Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16 and Constitution Ave. N.W., Wash., D. C. Bids June 9. CD 5/19.

▲† **Humphreys & Harding**, 1608 New Hampshire Ave. N.W., Wash., D. C., CA **$1,461,000**, utilities bldg. at Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16 and Constitution Ave. N.W., Wash., D. C. Bids May 24. CD 5/26, under LB.

Sydnor Pump & Well Co., 1305 Brook Rd., Richmond, Va., CA **$61,000**, water tank and pumping station, CHESTERFIELD, VA. Chesterfield Co. Bd. Supvrs., Chesterfield, Va. CD 4/26.

Van Doren Bros., 2911 Hawthorne Ave., Richmond, Va., CA **$60,558**, water main (Chesterfield, Va.).

English Constr. Co., Altavista, Va., CA **$141,110** (5 bidders), ww imprvts., HARRISONBURG, VA. City, City Hall, Harrisonburg, Va.

Birsch Constr. Co., 3611 Henrico St., Norfolk, Va., LB **$121,170** (8 bidders), asphalt paving various streets; LB **$107,045** (6 bidders), crushed stone treatment various streets, NORFOLK, VA. Dpt. P. Wks., City Hall, Norfolk, Va.

F. L. Showalter, Inc., 2900 Fulks St., Lynchburg, Va., CA **$574,000** (9 bidders), sewer lines, RICHLANDS, VA., Town, Town Hall, Richlands, Va. Wiley & Wilson, 620 Court St., Lynchburg, Va., engrs.

Coleman Trainor & Co., 421½ 11 St., Huntington, W. Va., CA **$304,356** (7 bidders), sewage treatment plant (Richlands, Va.).

Richmond Produce Market Auth., City Hall, Richmond, Va., rejected bids Mar. 28, sewers crossing C & O Railroad, RICHMOND, VA. May be re-advertised. CD 3/17.

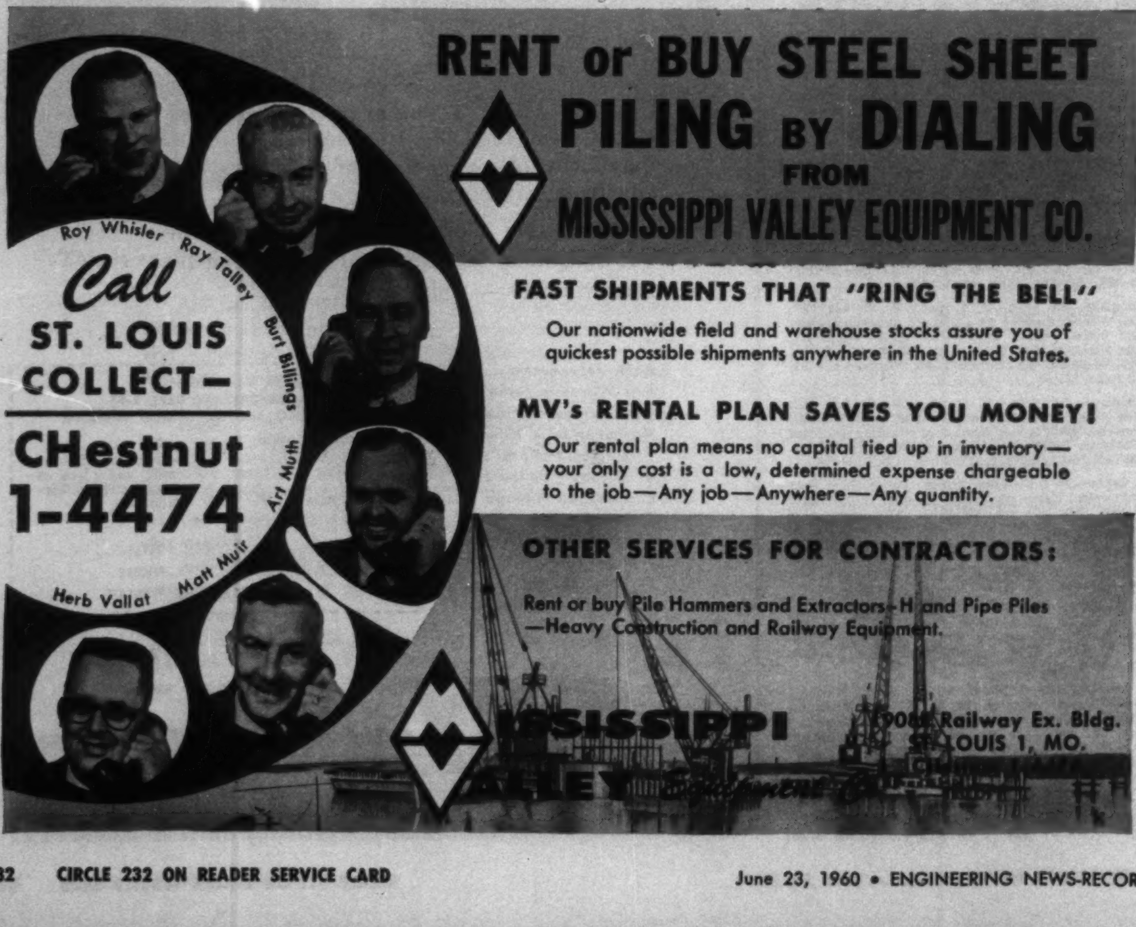
Newport News Shipbuilding & Drydock Co., 4101 Washington Ave., Newport News, Va., CA four waterwheels for generator, Roanoke Rapids, Halifax Co.; four 21 ft. hydraulic turbines, Gaston Dam Proj. NORTH CAROLINA. Virginia Electric & Power Co., 7th and Franklin Sts., Richmond, Va. CD 6/7, under CA.

Henrico Co. Bd. Supervisors, 21 and Main Sts., Richmond, Va., Own Forces, **$110,000**, extension Laburnum Ave.; **$91,000**, straightening, wid'n. Three Chopt Rd., RICHMOND, VA. CD 6/9.

J. M. Turner & Co., Electric Rd., Salem, Va., CA **$628,650**, sewage treatment plant, STAUNTON, VA. City, City Hall, Staunton, Va. Bids May 5. CD 4/14.

Stanley Furniture Co., Stanleytown, Va., Owner Builds **$150,000**, RECREATION PARK AND CENTER, MARTINSVILLE, VA.

Brock & Davis, Inc., Waynesboro, Va., CA **$258,719**, sewage treatment plant, SOUTH BOSTON, VA. City, City Hall, South Boston, Va. Bids May 12. CD 5/27, under LB.



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Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh, Pa., CA, three 87,500 kw waterwheel generators for Hydroelectric Plant on Cataba River, NORTH CAROLINA. Duke Power Co., 430 S. Church St., Charlotte, N. C. CD 6/17.

Atlantic Bitulithic Co., 2805 Indiana Ave., Winston-Salem, N. C., LB **$245,058**, street paving WINSTON-SALEM, N. C. City, City Hall, Winston-Salem, N. C. Bids June 7. CD 1/25/52.

City, City Hall, Cullman, Ala., Own Forces, **$175,000**, 8,939 ft. pavement, curbs and gutters on city streets, CULLMAN, ALA. V. H. Padgett, City Hall, Cullman, Ala., city engr.

▲ **Forcum Lannon, Inc.**, Dyersburg, Tenn., LB **$1,060,-873**, water treatment plant and WW imprvt., HENDERSON, KY. City, City Hall, Henderson, Ky. Bids June 14. CD 5/18.

† **Southside Plumbing Co.**, P. O. Box 221, Farmville, Va., LB **$309,297** alterations, addn., 500 Wherry Housing units, SHAW AIR FORCE BASE. IFB 38-601-60-118, SHAW AIR FORCE BASE, S. C. Base Procurement Office, Bldg. 1033, Shaw Air Force Base, S. C. Bids June 6. CD 5/18.

† **John F. Watson**, 716 NW 15th St., Oklahoma City, Okla., LB **$233,142**, preventative maintenance and painting, Patrick Air Force Base, IFB 08-606-60-614. COCOA, FLA. Procurement Office, Bldg. 430, Patrick Air Force Base, Cocoa, Fla. CD 6/4/59.

Saine Co., Inc., P. O. Box 2104, Orlando, Fla., LB **$210,933**, Part C-force mains; LB **$95,511**, Part B-lift station, GAINESVILLE, FLA. City, City Hall, Gainesville, Fla. Bids June 6. CD 5/16;
Hercules, Inc., 3714 Blanding Blvd., Jacksonville, Fla., LB **$125,611**, Part A-sewer gravity lines (Gainesville, Fla.).

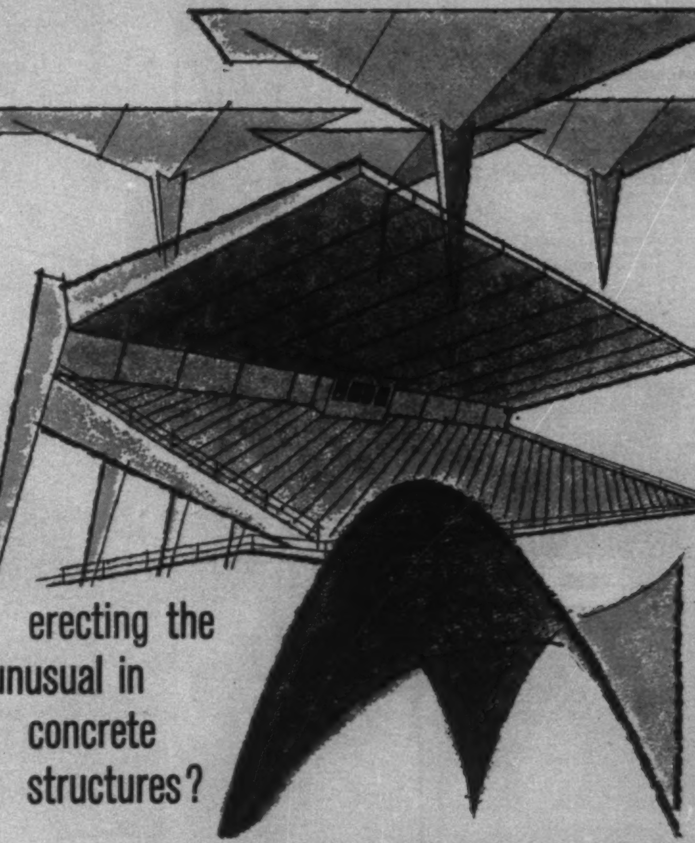
GEORGIA—State Hy. Dpt., Public Information Office, No. 2 Capitol Sq., Atlanta, Zone 3, Bids opened 5/27,
Rogers Bridge Co., Inc., Box 145, Waycross, Ga., LB **$91,636**, bridge, graded, paved approaches 0.17 mi. Louisville and Nashville R.R. on Dalton to Ringgold Rd., State Rte. 3, Proj. BA (2) 1774-A(6), Whitfield Co. CD 5/18.

▲ **GEORGIA**—State Hy. Dpt., Public Information Office, No. 2 Capitol Sq., Atlanta, Zone 3, Bids opened 5/27,
Ga.—**Hugh McMath Constr. Co.**, Box 38, Columbus, Ga. LB **$909,398**, grading, paving 1.293 mi. Eufaula, Alabama to Georgetown, Georgia Rd. US 82 relocation, at east end Proposed Bridge over Chattahoochee River extending east on relocation to present US 82, Georgetown, FA Proj. F 373 (2), Proposal B, Quitman Co.;
Ga.—**Keheley & Co., Inc.**, 3166 Maple Dr. NE, Rm. 229, Atlanta, Ga., LB **$412,995**, wid'n., resurf. 6.767 mi. Forsyth to Juliette Rd. FAS Rte. 765 beginning at State Rte. 42, Forsyth extending northeast, FAS Proj. S 0765 (1) Monroe Co.;
Ga.—**Knox Bros., Inc.**, Box 311, Thomson, Ga., LB **$166,201**, grading, base, surf. treatment, one bridge on Adrian to Norristown Rd., 4.989 mi. FAS Rte. 2195 beginning at State Rte. 26 approx. 3.0 mi. east of Adrian extending southeast to State Rte. 171, Norristown, FAS Proj. S 2195 (1), Emanuel Co.;
Ga.—**Seaboard Constr. Co.**, Box 567, Brunswick, Ga. LB **$596,064**, grading, base, surf. treatment 9.756 mi. Cox to Darien Rd., State Rte. 251 beginning at Seaboard Airline RR, Cox, extending southeast to State Rte. 25 north of Darien, FAS Proj. S 2387 (1) and S 1891 (1), McIntosh Co.;
Ga.—**Coffee Constr. Co.**, Box 329, Eastman, Ga., LB **$177,568**, grading, stab. base, surf. treatment, Empire to Chester Rd., State Rte. 257, 5.663 mi. S.R. 257, approx. 4.5 mi. east of Empire extending northeast to State Rte. 126, Chester (one bridge at Gum Creek excepted) FAS Proj. S 1622 (2) Dodge Co.;
Ga.—**Hill Constr. Co.**, Box 366, Thomaston, Ga. LB **$233,582**, grading, stab. base, surf. treatment, one bridge Oakland School to Liberty Church Rd., 7.151 mi. State Rte. 127, beginning at State Rte. 41, approx. 9.0 mi. north of Buena Vista extending easterly toward Mauk, FAS Proj. S 1803 (1) Marion Co.;
Ga.—**R. A. Bowen Inc.**, Box 1164, Macon, Ga., LB **$203,446**, grading, stab. base, surf. treatment, one bridge Fort Valley to Bryon Rd., 7/034 mi. FAS Rte. 1509, beginning at State Rte. 49 approx. 3 mi. northeast of Fort Valley extending northeast to State Rte. 42, Byron, FAS Proj. S 1509 (1) Peach Co. CD 5/18.

GEORGIA—State Hy. Dpt., Public Information Office, No. 2 Capitol Sq., Atlanta, rejected bids May 27, base, surf. treatment on Pulliam Rd. 1.092 mi. beginning at West Silver Shoals Rd. approx. 2.5 mi. northeast of State Rte. 106, extending east to Akins Bridge Rd., Proj. SUPP 3 RR-PR 882 (1) Section 1, Stephens Co.; grading, stab. base, surf. treatment 1.511 mi. High School to Recreation Center Rd. beginning at State Rte. 23, approx. 0.5 mi. south of State Rte. 4, extending east and southwest, Proj. SUPP 3 RR PR 3698 (1) Charlton Co. CD 5/18.

GEORGIA—State Hy. Dpt., Public Information Office, No. 2 Capitol Sq., Atlanta, received no bids May 27, base, surf. treatment 2.015 mi. West Lilly Pond Rd. beginning at State Rte. 91, approx. 1 mi. southwest of Albany Airport extending west to Hartwell School, Proj. No. 6-RR-PR-1299 (3) SPUR, Contract 2, Dougherty Co. CD 5/18.

▲ **GEORGIA**—State Hy. Dpt., Public Information Office No. 2 Capitol Sq., Atlanta, Zone 3, Bids opened 5/27
Ga.—**Wannamaker & Wells, Inc.**, Orangeburg, S. C., LB **$1,141,619**, eleven bridges on Atlanta to Chattanooga Rd., Interstate Rte. 75, US Rte. 41, the Oostanaula River, Resaca Rd., County road, Sugar Valley Rd., Swamp Creek and Southern Railroad, FA Proj. I 75-3(11)332, Contract 2, Gordon and Whitfield Counties CD 5/18.



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Long Reach—the ability to handle up to 300 feet of boom permitted J. L. Simmons Company to work from the perimeter of the job and spot light loads anywhere . . . resulted in faster, more economical construction, more efficient operation.

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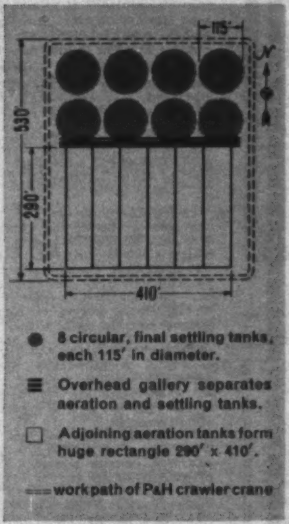
Fast, Effortless Swings—with exclusive Magnetorque® drive. The big crane gave Simmons more work loads per hour and smoother, more accurate

Long reach of the 110-ton P&H permitted efficient work procedure. Here the crane loads concrete bucket from mixer truck on job perimeter before delivery to work area.

Precise spotting of work loads was a cinch due to P&H planetary boom hoist, unmatched stability and positive-action hydraulic controls.



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≡ Overhead gallery separates aeration and settling tanks.

☐ Adjoining aeration tanks form huge rectangle 290' x 410'.

--- work path of P&H crawler crane

Overall job layout and type of unit construction indicates importance of perimeter work operation.

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Accurate Spotting of Loads—precise accuracy in spotting loads at far-out reaches was a problem on this job—and was solved through Independent Planetary Boom Hoist, which permitted power lowering of the boom, together with the simple Hydraulic Control System—where the slightest lever or pedal movement produced immediate response—resulted in smoother work cycles with no lost time jockeying for position.

Unmatched Stability—the ability to handle up to 300 feet of boom and the rated loads with utmost accuracy and safety were the result of P&H balanced design, even weight distribution and the extra wide 16' 10" crawler assembly. It was this built-in stability that permitted those long reaches with full capacity loads.

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ALLIED EQUIPMENT, INC.
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MISSOURI-ILLINOIS TRACTOR & EQUIP. CO.
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Lincoln, Nebraska
A-D MACHINERY CO., INC., Elko, Nev.
NOBLE-BELISLE MACHINERY, INC.
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C. A. LIPPINCOTT & BRO., INC.
Moorestown, New Jersey
JOHNSON & DEALAMAN, INC.
Newark 5, New Jersey
CONSTRUCTION MACHINERY CO.
Albuquerque, New Mexico
CONTRACTORS' SALES CO., INC.
Albany 5, New York
DOW & CO., INC.
Buffalo 7, N. Y.
MUNICIPAL MACHINERY CO., INC.
Coram, New York (Long Island)
CONSTRUCTION EQUIPMENT CORP.
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Marlboro, New York
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Potsdam, New York
CREDLE EQUIPMENT, INC.
Utica, N. Y.
BUCK EQUIPMENT COMPANY
Statesville, N. C.
GENERAL DIESEL & EQUIP. CO., INC.
Fargo, North Dakota
RISH EQUIPMENT COMPANY
Fifteen Branches in Ohio and the Virginias
BOARDMAN MACHINERY COMPANY
Oklahoma City 7, Oklahoma
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Portland 14, Ore.
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Harrisburg, Pennsylvania
A. T. GREEN MACHINERY COMPANY
Pittsburgh 23, Pennsylvania
C. C. & F. F. KEESLER
Prospect Park, Pennsylvania
ROADBUILDERS' EQUIPMENT, INC.
Columbia, South Carolina
PECAUT EQUIPMENT COMPANY
Sioux Falls, South Dakota
SOUTHLAND TRACTORS, INC.
Memphis, Tennessee
PLAINS MACHINERY COMPANY
Amarillo, Texas
CENTRAL TEXAS EQUIPMENT CO.
Austin, Texas
LUMBY MACHINERY COMPANY
Dallas 35, Texas
PEARCE EQUIPMENT CO. OF TEXAS
Houston, Texas
AIR MAC, INC., OF WASHINGTON
Seattle 4, Washington
CARRINGTON COMPANY
Seattle 4, Washington
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L. F. Wilder Constr. Co., P.O. Box 9786, Center Point, Birmingham, Ala., CA **$574,817,** natural gas distribution system, TIFTON, GA. City, City Hall, Tifton, Ga. Bids May 19. CD 6/2, under LB.

▲ **Fred E. Howland, Inc.,** 1451 N.W. 20th St., Miami, Fla., CA **$1,019,516,** 2-level PARKING DECK, Miami International Airport, MIAMI, FLA. Dade Co. Port Authority, 10th fl., Courthouse, Miami, Fla. Bids May 24, awarded June 6. CD 6/3, under LB.

Eubanks & Smith Pipeline Constr. Co., Greenville, Miss., LB **$269,889,** natural gas transmission and distrib. sys., FAYETTE, MISS. Town, Town Hall, Fayette, Miss. Pan-American Engrs., 3415 Arcadian Thruway, Baton Rouge, La., engrs. Bids May 25.

M & W Constr. Co., P. O. Box 388, Tupelo, Miss., LB **$359,335** sewer mains N. Broadmoor and S. Jackson Sts., JACKSON, MISS. City, City Hall, Jackson, Miss. Bids May 18. CD 12/31/58.

B. E. Walker Constr. Co., Box 9037, Jackson, Miss., CA **$161,019,** grading, drainage facilities, gravel surf. 5.651 mi. between Meadville and Knoxville. Proj. No. S-0272(1)B, MEADVILLE, MISS. Bd. Suprvs. Franklin Co., Court House, Meadville, Miss. J. W. Burt, Box 381, McComb, Miss., engrs. Bids May 30.

Flenniken Constr. Co., P. O. Box 650, Lake Charles, La., LB **$161,078,** 30,000 sq. yd. rein. con. paving, drainage, LAKE CHARLES, LA. City Council, City Hall, Lake Charles, La. Bids May 18.

P & S Constr. Co., Box 5958, Bossier City, La., LB **$187,083** Proj. 60-2(S) 36 in., sanitary sewermain and 8 to 24 in. sewer lines, SHREVEPORT, LA. City, City Hall, Shreveport, La. Bids May 24. CD 11/6/59.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort,

Ralph E. Mills Co., 410 Ann St., Frankfort, Ky., CA **$2,988,799** grading, drain. b. conc. 1.894 mi. incl. West abutments of Ky. River Bridge, Louisville-Lexington Rd. I-64-4(5)22, Franklin Co. Bids June 2. Awarded June 9. CD 6/7 under LB.

N & N Constr. Co., Inc., 1125 Alder Ave., Louisville 13, Ky., LB **$79,582** est. $111,915 (6 bidders) Contr. V, water main, ANCHORAGE, KY. City, City Hall, Anchorage, Ky. Bids June 7. CD 5/18,

W. E. Caldwell Co., 200 E. Brandeis, Louisville 8, Ky., LB **$55,645** est. $52,100 (6 bidders) WW imprvs. No. II, elevated steel tank and tower (Anchorage, Ky.),

Louisville Asphalt Co., 240 East Lee St., Louisville 8, Ky., LB **$53,400** est. $52,260 (4 bidders) Contr. IV-misc. water works structures (Anchorage, Ky.).

Mather Constr. Co., P.O. Box 388, Jeffersonville, Ind., CA **$387,176,** 1 story, no bsmnt. 64x66 ft. slab on grade, brick, precast roof water treatment plant addns. PLEASURE RIDGE PARK, KY. Louisville Extension Water Dist., 8360 Dixie Hy., Pleasure Ridge Park, Ky. Bids June 7. CD 5/16.

† **ALABAMA**—U. S. Eng., P.O. Box 1169, Mobile, Bids opened 6/1,

Hewitt Contracting Co., P. O. Box 869, Columbus, Ga., LB **$378,289,** Highway 165 alterations, ENG-01-076-60-56, Barbour and Russell Counties.

† **William M. Cowgur,** 1500 Canal St., New Orleans, La., LB **$150,102** est. $200,000 (6 bidders) Foreshore Protection, Mississippi River, Item M-70.5-R, Augusta-Live Levee; Item M-73.4-1, Stella-Dalcour Levee; and Item M-78.3-L, St. Claire Levee. CIVENG 16-047-60-202, LOUISIANA. U.S. Eng., foot of Prytania St., New Orleans, La. Bids June 2 CD 5/18.

DeWitt & Guy, Inc., 6065 Greenwell Springs Rd., Baton Rouge, La., LB **$183,960** natural gas sys. addn., alterations, ST. FRANCISVILLE, LA. Town, Town Hall, St. Francisville, La. Bids June 2 CD 5/26.

† **Valley Constr. Co.,** Box 388, Columbus, Miss., LB **$122,061** est. $200,000 emergency electric power plant, Barksdale Air For Base. Inv. 60-49, SHREVEPORT, LA. U. S. Eng., Gay Bldg., Little Rock, Ark. Bids June 2 CD 5/4.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,

Tenn.—**John L. Burns, Inc.,** Donelson Pike, Donelson, Tenn., CA **$2,726,379** grading, drainage constr. eight bridges 4.924 mi. Int. Rte. 40 west of Sawyer Brown Rd. to Westboro Dr. near west city limit of Nashville. Proj. I-40-3(14)196, Davidson Co.,

Tenn.—**Oman Constr. Co.,** Acklen Park, Nashville, Tenn., CA **$2,129,032** grading, drainage, constr. 4 twin prestressed concrete beam bridges 0.847 mi. Int. Rte. 24 in Chattanooga, west of Broad St. and extending to Market Pl. Proj. No. I-24-3(11) 123, Hamilton Co.,

Tenn.—**L & A Contracting,** Hattiesburg, Miss., CA **$1,543,200** grading, drainage, six deck girder bridges 4.717 mi. State Rte. 40, across the Hatchie River to Sunny Hill Rd. south of Brownsville, Proj. I-40-1(21) 60, Haywood Co.,

Tenn.—**Anderson-Gregory Co., Inc.,** Sudekum Bldg., Nashville, Tenn., CA **$2,999,573** grading, drainage, six sets twin concrete bridges 4.851 mi. Rte. 40 east of Gordonsville to east of Putnam County line near Buffalo Valley, Proj. No. I-40-5(9) 264, Smith and Putnam Counties. Bids May 27. Grand total $9,398,184. CD 6/2, under LB.

BUILDINGS—LB & CA

H. G. Allen, Culpeper, Va., LB **$418,725,** (6 bidders), CHURCH, CULPEPER, VA. Culpeper Baptist Church, Culpeper, Va.

B & B Constr. Co., Riverdale Center, Hampton, Va., CA Est. **$400,000,** STORE, HAMPTON, VA. Riverdale Shopping Center Corp., Hampton, Va. Enterprise Department Stores, Inc., lessee. Stanley B. Brundage, Blair Bldg., Norfolk, Va., archt.

▲ **Thorington Constr. Co.,** New Market, Va., CA **$1,239,400,** high SCHOOL between Shenandoah and Stanley, and school, LURAY, VA. Page Co. School Bd., Luray, Ca. CD 6/10, under LB.

Virginia Engineering Co., 80 29 St., Newport News, Va., LB **$880,000,** (8 bidders), Smith-Rogers MEMORIAL HALL, nurses' dormitory, NORFOLK, VA. Leigh Memorial Hospital, Mowbray Arch, Norfolk, Va. CD 1/19.

▲ **Reid & Hope,** Suffolk, Va., CA **$1,470,000,** Eastern High SCHOOL, PRINCESS ANNE, VA. Princess Anne Co. School Bd., Princess Anne, Va. CD 6/13, under LB.

Z. B. Robinson Constr. Co., P.O. Box 512, Asheville, N. C., LB **$684,000,** general contract, 39,000 sq. ft. Brooks-Howell HOME, ASHEVILLE, N. C. Women's Div. Christian Service of Methodist Church, 5122 Davenport St., Omaha, Neb. Bids June 7. CD 6/1.

R. W. Cabaniss, Tarrytown Dr., Richmond, Va., CA Est. **$400,000,** APARTMENTS, RICHMOND, VA. Crenshaw & Somma, Seaboard Bldg., Richmond, Va. CD 6/9.

Spottsylvania Co. Bd. Supervs., Spottsylvania, Va., rejected bids June 3, courthouse addn., SPOTTSYLVANIA, VA. CD 6/1.

Hand Constr. Co., P.O. Box 329, Belmont, N. C., LB Est. **$150,000,** mfg. PLANT, BELMONT, N. C. Beltex Corp., W. Main St., Belmont, N. C. Bids May 31. CD 5/27.

▲† **H. L. Coble Constr. Co.,** 1705 Battleground Ave., Greensboro, N. C., CA **$5,756,500,** CAPEHART HOUSING, ENG-31-075-60-25, FORT BRAGG, N. C. U.S. Eng., P.O. Box 1890, Wilmington, N. C. Bids May 17. CD 5/23, under LB.

Ruscon Constr. Co., P.O. Drawer 837, Charleston, S. C., CA **$571,323,** 60 unit HOUSING, AIKEN, S. C. Aiken Housing Auth., 1029 Pendleton St., Aiken, S. C. Bids June 7. CD 6/1.

Stanley Smith & Sons, 1905 Gervais St., Columbia, S. C., CA est. **$115,000,** AUTO SALES and SERVICE, CONWAY, S. C. Palmetto Chevrolet Co., Conway, S. C.

▲ **C. Y. Thomason Co.,** P.O. Box 232, Greenwood, S. C., LB **$1,634,700,** 120 bed HOSPITAL, SENECA, S. C. Oconee County Memorial Hospital, Walhalla Hy., Seneca, S. C. Bids June 8. CD 6/2.

▲ **George A. Creek & Son,** 755 Leesburg Rd., Columbia, S. C., CA **$1,683,148,** HOSPITAL addns., ROCK HILL, S. C. York County Hospital, Rock Hill, S. C. Bids June 1. CD 6/8, under LB.

T. C. Brittain Co., 148 New St., Atlanta, Ga., LB **$803,655,** 120,000 sq. ft. mfg. PLANT, ATLANTA, GA. Mead Corp., 233 Peachtree St. N.E., Atlanta, Ga. Bids June 7. CD 6/3.

Roy Dowdy and John Vlass, 272 Whitehall St. SW, Atlanta, Ga. Day Labor **$400,000,** 76 unit APARTMENT, Philadelphia St. N.W., ATLANTA, GA.

Abco Builders, 90 Rogers St. N.E., Atlanta, Ga., CA **$442,750,** Toney Drive Elementary SCHOOL, DECATUR, GA. DeKalb Co. Bd. Educ., DeKalb Bldg., Decatur, Ga. Bids May 5. CD 4/27.

Pattillo Constr. Co., P.O. Box 570, Decatur, Ga., CA Est. **$165,000,** 32,000 sq. ft. mfg. PLANT, DECATUR, GA. Southeastern Carbon Paper Co., E. Ponce de Leon Ave., Decatur, Ga.

Crider Poultry Co., Douglas, Ga., Separate Contracts, **$135,000,** poultry processing PLANT, DOUGLAS, GA. John T. Huff, 504 Bunn Bldg., Waycross, Ga., archt.

E. A. Scott & Son, P.O. Box 946, Americus, Ga., CA **$859,045,** HOUSING units, Proj. GA 205-1 and 205-2, FORT VALLEY, GA. Fort Valley Housing Auth., City Hall, Fort Valley, Ga. Bids June 7. CD 6/3.

▲ **Thomas J. Northcutt,** P.O. Box 394, Smyrna, Ga., Day Labor, **$1,000,000,** 84 RESIDENCES, JONESBORO, GA.

The Flagler Co., 305 Techwood Dr. N.W., Atlanta, Ga., LB **$178,996,** Building B-4 alterations, Aircraft Mfg. PLANT, MARIETTA, GA. Lockheed Aircraft Corp., 86 S. Cobb Dr., Marietta, Ga. Bids June 8. CD 4/4/56.

Timothy McCarthy Constr. Co., 1785 Cheshire Bridge Rd. N.E., Atlanta, Ga., CA Est. **$200,000,** WAREHOUSE-OFFICE, MORROW, GA. Sherwin-Williams Co., 101 Prospect Ave., Cleveland, O. Bids June 1.

Gra-Nell, Inc., Mableton, Ga., Day Labor, **$750,000,** 75 RESIDENCES, MARIETTA, GA.

P. Wk. Dpt., Key West Naval Air Station, Key West, Fla., cancelled bids to have been opened May 31, barracks Bldg. 57 imprvs., Key West Naval Air Station, NBy-31281, Spec. 31281/60 (SF) KEY WEST, FLA. CD 5/18.

R. B. Clarson Constr. Co., 1930 13th Ave. N., St. Petersburg, Fla., LB **$574,631,** est. $500,000, (8 bidders), 20,000 sq. ft. FACTORY addn., 12,000 sq. ft. office laboratory and engineering facilities for Atomic Energy Comn., LARGO, FLA. General Electric Co., Bryan Dairy Rd., Largo, Fla. CD 4/7.

Giller & Fryd Constr. Corp., 523 Michigan Ave., Miami Beach, Fla., CA **$623,331,** REDONDO ELEMENTARY SCHOOL, Homestead; FLORIDA CITY ELEMENTARY SCHOOL, Florida City, MIAMI, FLA. Dade Co. Bd. Pub. Instruction, 1410 N.E. 2nd Ave., Miami, Fla. Bids June 1, awarded June 6. CD 6/8, under LB.

Litt Constr. Co., 2100 SW 87th Ave., Miami, Fla., CA **$500,000,** forty-two, 1 story, 47x58 ft. CB-S RESIDENCES, SW 92nd Ave. and SW 58th St., MIAMI, FLA. Malibu Homes, Inc., 9241 SW 56th Terrace, Miami, Fla. Joel Meyer, 1090 NE 79th St., Miami, Fla., archt.

J. Hilbert Sapp Inc., 1905 N. Orange Ave., Orlando, Fla., LB **$894,850** (11 bidders) Life Science LAB-

ORATORY, classroom, office. State Proj. 0854, University of South Florida, TAMPA, FLA. State Bd. Control, County Courthouse, Tampa, Fla. Bids June 8. CD 5/16.

† **R. E. Clarson, Inc.**, 1930 13th Ave. N., St. Petersburg, Fla., LB **$564,689**, Pinellas Peninsular PLANT addn., ST. PETERSBURG, FLA. Atomic Energy Comn., Box 11500, St. Petersburg, Fla. Bids June 7. CD 6/8.

Brice Building Co., Inc., 1021 2 Ave. N., Birmingham, Ala., CA **$750,000**, 33,000 sq. ft. OFFICE, BIRMINGHAM, ALA. Commercial Realty Co., Clark Bldg., Birmingham, Ala. Warren, Knight & Davis, Protective Life Bldg., Birmingham, Ala., archts.

▲ **Sullivan, Long & Hagerty**, 805 5 Ave. N., Birmingham, Ala., CA **$2,429,000**, 250 units, low-rent HOUSING, maintenance and storage facilities, Tom Brown Village, BIRMINGHAM, ALA. Housing Auth. of Birmingham Dist., 600-N. 24 St., Birmingham, Ala. Bids May 17. CD 4/18.

▲ **Daniel Constr. Co.**, 822 7 Ave. S., Birmingham, Ala., LB **$1,105,000**, first unit, 60,000 sq. ft. HOME FOR THE AGING, BIRMINGHAM, ALA. Methodist Church of Ala.-West Florida Conference and North Ala. Conference, 1801 6 Ave. N., Birmingham, Ala. CD 2/17/59.

† **Reeves Constr. Co.**, 2810 3 Ave. South, Birmingham, Ala., LB **$172,581**, (4 bidders), ANIMAL LABORATORY and air-conditioning for Central Sterile Supply & Dental Suite, Bldg. 1, Veterans Admin. Hospital, BIRMINGHAM, ALA. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 7. CD 5/20.

A. K. McInnis, Jr., Inc., Hattiesburg, Miss., LB **$445,900**, SCHOOL, GULFPORT, MISS. Gulfport Municipal Separate School Dist., Gulfport, Miss. Willis T. Guild, Jr. and Lloyd K. Grace Assocs., 1319 24th Ave., Gulfport, Miss., archts. Bids May 26. CD 6/4/52.

J. A. Russ Constr. Co., Natchez, Miss., LB **$530,900**, Anchorage JUNIOR HIGH SCHOOL, NATCHEZ, MISS. Trustees Natchez Special Municipal Separate School Dist., 104 S. Commerce St., Natchez, Miss. Bids May 24. CD 12/11/58.

Southern Builders, Inc., Box 1815, Shreveport, La., CA **$848,000**, 3 story Women's DORMITORY, Northwestern State College, NATCHITOCHES, LA. State Bd. Educ., Capitol Bldg., Baton Rouge, La. CD 4/27, under LB.

Whitaker Constr. Co., Box 8176, Shreveport, La., CA est. Over **$300,000** AUTO PARKING GARAGE, Texas and Market Sts., SHREVEPORT, LA. Downtown Parking Center, Inc., c/o Peyton, Fisher & McKelvey, archts. Continental American Bank Bldg., Shreveport, La. Bids May 25. CD 3/10.

† **Foster Creighton Co.**, 724 1st American National Bank Bldg., Nashville, Tenn., LB **$616,000** (6 bidders) 10-MEV TANDEM Van De Graff Bldg. No. 5500 Proj. 40-60-17A, OAK RIDGE, TENN. U.S. Atomic Energy Comn., Oak Ridge, Tenn. Bids June 7. CD 5/31.

Sherman Constr. Co., McComb, Miss., LB **$114,790**, addn., renovation PLANT, SUMMIT, MISS. Town, Town Hall, Summit. Ragland Watkins, State Theatre Bldg., McComb, Miss., archt. McComb Mfg. Co., Summit Mills Div., lessee. Bids May 13.

Perrilliat-Rickey Constr. Co., Inc., P.O. Box 13128, New Orleans, La., LB **$482,400**, 2 story brick, steel, etc., STUDENT BLDG., LACOMBE, LA. Holy Redeemer College, Lacombe, La. Richard Koch and Samuel Wilson, Jr., Queen & Crescent Bldg., New Orleans, La., archts. Bids May 18.

▲† **C. F. Braun & Co.**, 45 Rockefeller Plaza, New York, N. Y., CA **$2,220,000**, (4 bidders), FEED WATER HEATERS, Paradise Steam Plant, PARADISE, KY. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. Awarded June 10. CD 3/25.

▲† **W. F. Holt & Sons, Inc.**, 1119 Laurel St., Nashville, Tenn. and **Johnson, Drake & Piper, Inc.**, 2244 W. Holcombe Blvd., Houston, Tex., LB **$9,345,000**, (9 bidders), GENERAL MEDICAL and SURGICAL HOSPITAL and REGIONAL OFFICE CLINIC, NASHVILLE, TENN. Veterans Admin., Constr. Service, Munitions Bldg., Wash. 25, D. C. Bids June 14. CD 4/27.

† **Foster Creighton Co.**, 724 1st American National Bank Bldg., Nashville, Tenn., CA **$667,000**, 10-MEV TANDEM Van De Graff Bldg. No. 5500, Proj. 40, 60-17A, OAK RIDGE, TENN. U. S. Atomic Energy Comn., Oak Ridge, Tenn. Bids June 7. CD 6/16, under LB.

H. F. and T. B. Byrd, Inc., Harrisonburg, Va., Owner Builds, **$125,000**, COLD STORAGE PLANT ADDN., HARRISONBURG, VA. CD 6/6.

▲ **Reid & Hope**, Suffolk, Va., LB **$1,470,000**, (7 bidders), Eastern High SCHOOL, PRINCESS ANNE, VA. Princess Anne Co. School Bd., Princess Anne, Va., CD 3/24.

Thorington Constr. Co., Inc., 2106 N. Hamilton St., Richmond, Va., CA est. **$600,000**, Heart of Richmond MOTEL addn., Richmond, Va., C & T of Roanoke, Inc., Belvidere and Franklin Sts., Richmond, Va. CD 4/14.

▲† **H. F. Coble**, 1043 Legion Pl., Orlando, Fla. CA **$3,721,160**, 229 unit CAPEHART HOUSING, Naval Auxiliary Air Station, Whiting Field MILTON, FLA. Dist. P. Wks. Office, 6th Naval Dist., Charleston, S. C., Bids May 11. CD 5/13 under LB.

▲ **Algernon Bliar, Inc.**, P. O. 749, Montgomery, Ala., CA est. **$1,250,000** APARTMENT, ST. PETERSBURG, FLA. Indian Pass Apartments, c/o contractor.

Spaw-Glass, Inc., P. O. Box 25025, Houston, Tex., LB **$515,315**, three GARAGES, MERIDAN, MISS. City, City Hall, Meridian Miss. Bids May 17 CD 5/9.

Southern Builders, Inc., Box 1815, Shreveport, La., CA **$743,900** STUDENT JUNIOR-SENIOR HIGH SCHOOL, SHREVEPORT, LA. Caddo Parish, School Bd., Shreveport, La. Awarded June 4 CD 6/2 under LB.

▲ **Badger Manufacturing Co.**, 230 Bent St., Cambridge, Mass., CA over **$5,000,000** HYDRODEALKYLATION UNIT, No. 1 Refinery, CATLETTSBURG, KY. Ashland Oil & Refining Co., 1409 Winchester Ave., Ashland, Ky. CD 4/26.

† **James A. Baker**, 112 19th Ave., Nashville, Tenn., LB **$467,450** (5 bidders) SPECIAL ACTIVITIES addn. Bldg. 107, Veterans Administration Hospital, MURFREESBORO, TENN. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 7 CD 4/11.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., Waukegan—BA 6/27—City, City Hall, No. 87-cs, c. conc., bit. street paving, wid'n., 7,332 ft. concrete curb, $90,000. CD 4/2/59.

† **Ill., Great Lakes**—PARKING AREA, etc.—BA 6/28—Dist. P. Wks. Office, 9th Naval Dist., Bldg. 1-A, parking area, road repairs, Naval Training Center, Spec. 31079/60. $25,000-$100,000. CD 9/25, under Public Bldgs.

† **Mich., Grosse Ile** — SUPPORT ITEMS FOR MOBILE TACAN—BA 6/28—Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, Great Lakes, Ill., mobile tacan, incl. electrical substation, fencing, concrete pad for transformers, crushed stone floor and TACAN signs, Naval Air Station, Spec. 31075/60. Under $10. CD 6/28/51.

O., Dayton—BA 7/5—Bd. Comrs. Montgomery Co., Courthouse, road repairs, $129,048. Carl H. Bauer, co. engr. CD 2/21/45.

Ill., Danville—BA 7/8—Vermilion Co., Court House, No. 65-MFT, bit. road paving, 1,444 ft. 6 to 18 in. storm sewers, $268,000. CD 5/23/51.

O., Oxford—BA 7/12—State Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, circular drive for campus, Miami University. Plans deposit $10. Cellarius & Hilmer, 613 Gas & Electric Bldg., Cincinnati, archts. C. E. Bentz, State Office Bldg., state consult. archt.

BUILDINGS—BA

† **Wis., Beaver Dam** — ARMY RESERVE CENTER — BA 6/27—U. S. Eng., 536 S. Clark St., Chicago 5, Ill., 1 story, approx. 4,500 sq. ft., conc. fdn. Army Reserve Center; 1 story, approx. 1,300 sq. ft. maintenance shop, exterior facilities, ENG-11-032-60-111, $150,000. CD 6/9.

O., New Concord—DORMITORY—BA 7/12—Muskingum College, men's dormitory. Plans deposit $50. Benham, Richards & Armstrong, 1124 Goodale Blvd., Columbus, archts. CD 5/14/59.

▲ **Ill., Chicago**—PLANT—Bids Asked—Pfaelzer Bros., Inc., 939 W. 37th Pl., meat processing plant, office, docks and paving, 4501 W. 42nd Pl., $1,200,000. A. Epstein & Sons, Inc., 2011 Pershing Rd., archts. CD 3/4.

Ill., Forest Park—INSPECTION SHOP, etc.—Bids Asked—Chicago Transit Auth., Merchandise Mart, Chicago, Zone 54, 80x300 ft. rein.-con., steel Rapid Transit Inspection Shop and Service Bldg., $750,000. Skadberg Olson Co., 2532 N. Milwaukee Ave., Chicago, archt. CD 6/24/58.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 6/7,

O.—**C. A. Agresta Constr. Co.**, 4186 Greenvale Rd., Cleveland, O., LB **$562,459**, est. $574,500, (3 bidders), Type T 71, 1.251 mi. CR No. 73, S-1241(2), Village of Highland Heights and Mayfield, Proj. 204, Cuyahoga Co.;

O.—**F. H. Brewer Co.**, P.O. Box 372, Lancaster, O., LB **$198,626**, est. $202,100, (1 bidder), Type T 35, 8.06 mi. US Rte. 33, State Rte. 216 (Parts Nos. 1 to 8, incl. City of Nelsonville) (Village of Buchtel) (Village of Murry City);

O.—**Edgar Spring, Inc.**, RD No. 1, New Philadelphia, O., LB **$162,422**, est. $135,600, (1 bidder), Type T 35 5.048 mi. State Rte. 644-0.00 (0.00-4.31) Villages of Salineville and Summitville Proj. 209, Carroll and Columbiana Counties;

O.—**City Asphalt & Paving Co.**, 120 Pike St., Youngstown, O., LB **$129,298**, est. $128,400, (1 bidder), Type T 35 3.569 mi. US Rte. 62, State Rte. 14-A (Parts Nos. 1 and 2) City of Salem, Proj. 210, Columbiana and Mahoning Counties;

O.—**Heffner Constr. Co.**, 509 N. Main St., Celina, O., LB **$560,719**, est. $583,600, (7 bidders), Type T 71 2.37 mi. US Rte. 36-18.78 (Village of Gettysburg) Proj. 211, Darke Co.;

O.—**Visintine & Co.**, 1315 Edgehill Rd., Columbus, O., LB **$842,000**, est. $824,700, (4 bidders), Type T 34 on B 19, structure 2.875 mi. State Rte. 16 (7.79-10.44) City of Columbus, Proj. 212, Franklin Co.;

O.—**Ohio Engineering Co.**, 1945 E. 28th St., Lorain, O., LB **$130,000**, est. $134,400, (2 bidders), Type T 35 on B 219 0.757 mi, US Rte. 224 (12.02-12.57) City of Findlay, Proj. 213, Hancock Co.;

O.—**John Hill Contracting Co.**, Lexington, O., LB **$1,181,695**, est. $1,309,000, (11 bidders), Type T 35, T-71 and structure 0.668 mi. US Rte. 62-19.11 (City of Youngstown) Proj. 214, Mahoning Co.;

O.—**Union Quarries Co.**, 1015 Oak St., Van Wert, O., LB **$228,183**, est. $228,230, (1 bidder), Type T 30, B-35 14.98 mi. US Rte. 127, 224, (Parts 1 to 4, incl.) US Rte. 224 (2.87 Ottoville) 2.93, 3.28; US Rte.

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O.—**National Engineering & Contracting Co.**, 1968 W. 3rd St., Cleveland, O., LB **$1,779,962**, est. $2,049,-300, (11 bidders), Type T 71, structures 1.315 mi. US Rte. 224-5.11 (Cities of Akron and Barberton) Proj. 219, Summit Co.;

O.—**Central States Constr. Co.**, Box 148, Wadsworth, O., LB **$158,351**, est. $155,200, (5 bidders), Type T 71 and T 35 0.692 mi. US Rte. 224-8.99 (City of Akron) Proj. 220, Summit Co.;

O.—**McCourt Constr. Co.**, 720 Home Ave., Akron, O., LB **$147,437**, est. $147,700, (2 bidders), Type T 35 5.58 mi. State Rte. 5 (13.46-14.70) State Rte. 8 (5.11-5.21) (7.04) State Rte. 18 (6.19-6.79) (11.34-11.66) City of Akron (City of Cuyahoga Falls, Proj. 221, Summit Co.;

O.—**Shelly & Sands, Inc.**, Thornville, O., LB **$134,373**, est. $123,200, (1 bidder), Type T 34 4.45 mi. US Rte. 50A-25.90, Proj. 223, Washington Co.;

O.—**Ohio Valley Paving Corp.**, Masonic Bldg., St. Clairsville, O., LB **$108,330**, est. $132,570, (4 bidders), Type T 30, T-31 on B 111 18.55 mi. Proj. 247, Monroe and Noble Counties. CD 5/17.

OHIO—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, cancelled bids to have been opened June 7, Type T 32 on B 19 2.565 mi. CR No. C-10, S 1163(2) Proj. 205, Meigs Co. CD 5/17.

Simonelli Paving & Grading Co., 7801 Old Granger Rd., Cleveland 25, O., CA **$749,028**, improving 130th St. from Hummel Rd. to NYC RR, CLEVELAND, O. Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Cleveland 13, O. Bids May 19. Awarded May 23. CD 5/25 under LB.

▲ **Complete General Constr. Co.**, 1221 E. 5th Ave., Columbus, O., LB **$1,063,868** est. $1,225,000, 1st Section Selzer Rd. water main, COLUMBUS, O. City, City Hall, Columbus, O. Bids June 7. CD 5/18.

Marvin E. Farrier, 704 Greemont St., Dayton, O. LB $128,024 est. **$140,000** (4 bidders) bridge, Union Rd., Trotwood, DAYTON, O. Bd. Comrs. Montgomery Co., Courthouse, Dayton, O. Bids June 7. CD 5/17.

Homer A. Merritt, 444 Broadway, Lorain, O., LB **$128,789** (3 bidders) water main, W. River Rd., Schaden Rd., Penrose Court, Fackler Ave., ELYRIA, O. City, City Hall, Elyria, O. Bids June 7. CD 3/22.

Flabo Constr. Co., 925 Colorado Ave., Lorain, O. LB **$206,831** (3 bidders) imprvts. seven streets, ELYRIA, O. City, City Hall, Elyria, O. Bids June 7. CD 4/18.

Mansfield Asphalt Paving Co., Rear 153 Orange St., Mansfield, O., LB **$109,753** est. **$130,000** (2 bidders) repaving 14 streets, MANSFIELD, O. City, City Hall, Mansfield, O. Bids June 7. CD 6/7.

▲ **Harry J. Forepaugh & Sons Inc.**, 10080 Shepard Rd., Macedonia, O., CA **$1,936,071**, HIGH SCHOOL, PARMA, O. Bd. Educ., 5401 W. 54th St., Parma, O. Bids Apr. 28. Awarded June 7. CD 5/6 under LB.

Sam Ross & Sons Inc., 1250 Colorado Ave., Lorain, O. and **Kenneth R. Evenson Co.**, Vermilion, O., CA est. **$100,000**, Family Club Swimming Pool, VERMILION, O. Sun-Fun Swim Club, c/o Kenneth R. Evenson, Vermilion, O. Meyers & Fauver, 945 Broadway, Lorain, O., archts. R. E. Warner & Assocs., Broadway Bldg., Lorain, O., engrs.

† **J. T. Maloney Constr. Co.**, 8307 Jennings Rd., St. Louis 36, Mo., LB **$750,385**, est. $562,140, (5 bidders), levee imprvts., Wood River Drainage and Levee Dist., Proj. Items III-R and IV-R, Madison Co., vicinity of Wood River and Hartford, CIVENG-23-065-60-50, ILLINOIS. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids June 9. CD 5/6.

† **U. S. Engr.**, 420 Locust St., St. Louis 2, Mo., rejected bids opened May 5, levees, Clear Creek Drainage & Levee Dist., Proj. Item VI-D incl. approx. 2 mi. earthen levee, Union Co., along west bank Clear Creek near McClure, CIVENG-23-065-60-44, LB **$362,110**, ILLINOIS. CD 5/10, under LB.

ILLINOIS—Dpt. P. Wks., & Bldgs., Div. Hys., Centennial Bldgs., Springfield,
rejected bids opened May 27, resurf. 2.78 mi. FA 36 Quincy, Adams Co., LB **$135,929**; base course 2.84 mi. from Lake Forest west and north on FAS 1013 and 209, Lake Co. LB **$117,530**. CD 6/3, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,
Ill.—**S. J. Groves & Sons**, 1104 E. Reynolds St., Springfield, Ill., CA **$1,274,437**, surf. 4.82 mi. FAS 421 between Warsaw and Hamilton, Hancock Co.
Ill.—**Hollembeak Constr. Co.**, 726 S. 22nd St., Quincy, Ill., CA **$738,704**, base course 9.4 mi. FAS 1588 and 432 from Siloam Springs State Park north, Adams Co. Bids May 27. Awarded June 9. CD 6/3, under LB.

H. H. Mass Constr. Co., Main St., Algonquin, Ill., LB **$286,852**, Riverside Parking Proj., ELGIN, ILL. City, City Hall, Elgin, Ill. W. A. Rakow & Assocs., 202 E. Chicago St., Elgin, Ill., engrs. Bids May 31. CD 12/3.

Jamar-Olman Co., 2030 Janice St., Melrose Park, Ill., CA **$134,200**, air conditioning Fair Dept. Store, CHICAGO, ILL. The Fair Store, 140 S. State St., Chicago, Ill. Carrier Corp., Merchandise Mart, Chicago 54, Ill., engrs. Awarded June 10.

J. A. Ross & Co., 3147 N. Cicero St., Chicago, Ill. LB **$88,786**, widening, paving Austin Ave. from Gunnison to Elston Ave., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids June 6. CD 5/23.

General Contracting Co., 22nd and Monroe Sts., Granite City, Ill., CA **$148,231**, No. 79-MFT, c. conc. paving 0.44 mi., 2,543 ft. 12 to 18 in. storm sewers, 3,568 ft. curb and gutter EDWARDSVILLE, ILL. Bd. Comrs. Madison Co., Courthouse, Edwardsville, Ill. Bids June 7. CD 6/3.

Detroit Asphalt Paving Co., 1500 E. Nevada Ave., Detroit, Mich., CA **$89,783**, Contr. PS-3057, resurf. streets and alleys, Mac-Concord Conservation, DETROIT, MICH. City, 528-City-County Bldg., Detroit 26, Mich. Bids May 24. Awarded June 9. CD 5/6.

Detroit Housing Comn., 2211 Orleans St., Detroit 7, Mich., rejected bids to have been opened June 8, Hermann Gardens Proj. Mich. 1-4, pavement, sidewalks, curbing. Southfield and Joy Rds.; Charles Terrace, Mich. 1-5, sidewalks, pavement, curbing and related work, Buffalo and Charles Sts.; John W. Smith Jones. Mich. 1-6, sidewalks, pavement, curbing, Evergreen-Lydon Sts.; Jeffries Homes, Mich. 1-7, sidewalks, pavementfi curbing and related work, Canfield-Gibson Sts.; Brewster-Douglas Homes, Mich. 1-1, 1-8, 1-13, sidewalks, pavement, curbing. Mack-Hastings Sts.; Sojuner Truth Homes. Mich. 1-15, sidewalks, pavement, curbing, Nevada-Fenlon Sts.; Parkside Homes, Mich. 1-2, & 1-14, sidewalks, pavement, curbing and related work Connors-Frankfort Sts. DETROIT, MICH. Will re-advertise. CD 5/26.

Kutchins Paving Co., 1516 Moores River Dr., Lansing, Mich., CA **$94,871**, (4 bidders), Proj. WC-60-AG3, paving, sewers, drainage structures Arnold, Cathedral, Fox, Indian and Poinciana Aves., Redford Twp., DETROIT, MICH. Wayne County Rd. Comrs., 711 City-County Bldg., Detroit 26, Mich. CD 11/14/56.

North-East Constr. Co., 2987 Helen Ave., Detroit 7, Mich., LB **$243,948**. Proj. WS-102A, 5.075 lin. ft. 54 in. water main, Dequindere Ave. between 11 and 12 Mile Rds., Madison Heights and Warren, DETROIT, MICH. City, Dpt. Water Supply, 735 Randolph, Detroit 26, Mich. Bids June 8. CD 5/18.

† **Sugden Co., Inc.**, 10460 W. 9 Mile Rd., Oak Park 37, Mich., LB **$159,567**, approach lighting, 6,000 lin. ft. fence, 1,800 lin. ft. 30 in. culvert pipe, etc. ENG-20-064-60-41 SELFRIDGE AIR FORCE BASE, MICH. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids June 9. CD 6/2.

BUILDINGS—LB & CA

▲ **J. A. Kassab, Inc.**, No. 2 Gateway Center, Pittsburgh 22, Pa., CA **$1,500,000**, (5 bidders) metallurgical lime PLANT, Belt Line, CLEVELAND, O. Cuyahoga Lime Co., c/o Minerals & Chemical Corp., Menlo Park, N. J. Bids May 16. CD 5/16.

Zediker Masonry, 154 W. 2nd St., Mansfield, O. CA **$225,000**, 70x226 ft. MOTOR FREIGHT TERMINAL, MANSFIELD, O. All States Freight Inc., 1250 Kelly St., Akron, O. Marr, Knapp & Crawfis, 138 Ray Ave. NW, New Philadelphia, O., archts.

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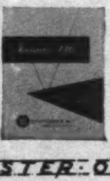

† **U. S. Eng.**, 1819 Pershing Rd., Chicago, Ill., cancelled bids to have been opened about June 23, ARMY RESERVE CENTER, ENG-11-032-60-110, BLOOMINGTON, IND., $400,000. CD 6/2.

Continental Constr. Co., 5642 W. Lake St., Chicago, Ill. CA **$300,000** est. $500,000, 1 story, 59,000 sq. ft. FACTORY, Junior Court and Belmont Ave., DOWNERS GROVE, ILL. Day-Kay Enterprise, c/o Robert C. Taylor, archt., 212 S. Marion St., Oak Park, Ill. Awarded June 12. CD 6/7.

B. W. Handler Constr. Co., 223 W. Jackson Blvd., Chicago 6, Ill., LB **$635,744**, Cook County HOSPITAL, MENS DIV., alterations, 1835 Harrison St., CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. Richard Prendergast, 30 N. Dearborn St., Chicago 2, Ill., archt. Bids about June 2. CD 11/12/48.

A. R. DeLisi, 11622 S. Western Ave., Chicago, Ill., CA **$400,000**, 1 story, brick ELEMENTARY SCHOOL, Roosevelt Rd. and May St., CHICAGO, ILL. Holy Family School, 1103 S. May St., Chicago, Ill. Joseph L. Bennett, 3 N. Broadway, St., Des Plaines, Ill., archt. Awarded June 10.

I. Holzman & Co., 5415 W. Madison St., Chicago, Ill., CA **$500,000**, 32,000 sq. ft. LIBERTY SHOPPING CENTER, 13th St. and Blue Island Ave., CHICAGO, ILL. Nathan Roskin, 3105 Jarvis Ave., Chicago, Ill. Baranick & Conte, 332 S. Michigan Ave., Chicago 4, Ill., archts. Awarded June 10.

T. S. Willis Co., 202 Milwaukee St., Janesville, Wis. CA **$729,436**, Phase 1, HOSPITAL addn., FREEPORT, ILL. Deaconess Hospital, 420 S. Harlem Ave., Freeport, Ill. Bids May 17.

V & E Constr. Co., Market Sq., Galena, Ill. LB **$676,164**, Phase 2-HOSPITAL addn., alterations, FREEPORT, ILL. Deaconess Hospital, 420 S. Harlem Ave., Freeport, Ill. Bids May 17.

▲ **R. E. Daily Co., Inc.**, 21675 Telegraph Rd., Detroit, Mich., CA est. **$2,350,000**, 2 story brick, steel, METROPOLITAN HOSPITAL addn., DETROIT, MICH. Metropolitan Hospital, 1800 Tuxedo Ave., Detroit, Mich. Smith, Hinchman, Grylls, 3100 W. Grand Blvd., Detroit, Mich., archts. Awarded June 10.

J. A. Utley Co., 723 E. 10 Mile Rd., Royal Oak, Mich., CA est. **$250,000**, 2 story concrete, steel PLANT, DETROIT, MICH. Shatterproof Glass Co., 4815 Cabot St., Detroit, Mich. Robt. Snyder & Assoc., 390 E. Maple, Birmingham, Mich., archts. Awarded Apr. 5.

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HEAVY CONSTRUCTION—BA

† **Kan., Olathe**—BLDG. IMPRVS.—BA 6/27—Dist. P. Wks. Office, 9th Naval Dist., Bldg. 1-A, Great Lakes, Ill., repairs to Bldg. No. 43, Naval Air Station, Spec. No. 31082/60. $25,000-$100,000.

† **Wyoming**—PARK ROAD—BA 6/27—Bureau Public Roads, Bldg. 40, Denver Federal Center, Denver, Colo., grading and bit. stabilized base, 3.996 mi. Grand Loop and West Entrance, Yellowstone National Park, Yellowstone Co., Proj. 1-C Por., 3 Por. CD 9/21 under National Park Service.

Iowa, Clarion—BA 6/27—City, City Hall, 22,875 lin. ft. 30 in. concrete, curb and gutter, 5,040 tons b. conc. pavement, and 44,805 sq. ft. subgrade preparation, 8,920 cu. yd. excav., 1,265 lin. ft. storm sewer and related items. Plans deposit $25. Rowat-Murray Engineers, 1099 Kanyon Rd., Fort Dodge, engr.

† **Minn., East Grand Forks**—RADIO TRACKING FACILITY—BA 6/27—National Aeronautics & Space Admin., Goddard Space Flight Center, c/o Anacostia Naval Station, Wash., D. C., radio tracking facility, IFB S-138. CD 3/25.

† **Minn., St. Paul**—AIR CONDITIONING COURTROOM, etc.—BA 6/27—General Services Admin., P. Bldgs. Service, Region 6, 2306 E. Bannister Rd., Kansas City 31, Mo., air conditioning courtroom, U.S. Courthouse.

Tex., Fort Worth—BA 6/27—City, City Hall, seal coating 54 streets $100,000. Plans deposit $5. CD 11/21/58.

S. D., Sturgis—BA 6/28—U.S. Eng., 1709 Jackson St., Omaha, Neb., irrigation water supply facilities, Black Hills National Cemetery, ENG-25-066-60-173.

† **Tex., Dallas**—HANGAR REPAIRS—BA 6/28—Officer in Charge of Constr., Eighth Naval Dist. Bldg. 16, U.S. Naval Station, New Orleans (Algiers) La. Hangar No. 20 repairs, Naval Air Station, NBy-26007, Spec. 26007/59. $25,000-$100,000.

† **Kan., Salina**—CONVERSION BLDGS.—BA On or About 6/28—U.S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., conversion of bldgs. for Schilling Missile Facilities near here. ENG-23-028-60-109. $200,000. Plans deposit $10. CD 11/4/59.

▲ **COLORADO**—BA 6/28—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Adams and Arapahoe Counties—grading, structures, plant mixed asph. surf. 4.937 mi. Proj. F 013-1 (6) $290,000.

Adams Co.—grading, structures, concrete pavement 0.843 mi. Proj. I 25-3 (14) 215, $912,000.

Weld Co.—grading, structures, plant mixed asph. surf. 5.042 mi. Proj. R AD 27 (1) $134,000. CD 6/17/58.

† **Arkansas**—BA 6/30—U.S. Eng., P.O. Box 267, New Orleans, La., standard board revetment, Red River, Candler Lake, Item R-418 O-R, Miller Co., CIVENG-16-047-60-221. $200,000. CD 4/22/44 under Illinois-Louisiana.

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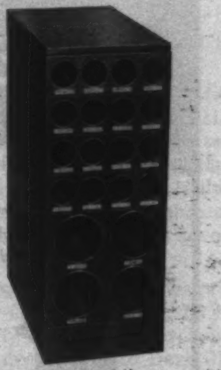

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KANSAS—BA 6/28—State Hy. Comn., Salina,
Cowley Co.—grading 7.892 mi. east jct. K-15 and US-166, southerly on K-15 to Kansas-Oklahoma State Line, Proj. 15-18 S 1362 (1). Walter Johnson, Topeka, engr.

Neb., Omaha—BA 7/19—City, City Hall, Minne Lusa Relief Sewer No. 2178, incl. approx. 4,484 lin. ft., 48 and 108 in. sewer in open trench, and 6,720 lin. ft., 108 in. sewer in tunnel, with laterals, incidental work. Plans deposit $20. CD 5/16.

† **Tex., Wichita Falls**—DORMITORIES—BA 6/28—Base Procurement Office, Bldg. 102 Sheppard Air Force Base, Wichita Falls, modernizing, air-conditioning 20 dormitories, Sheppard Air Force Base, Inv. 41-612-60-127, over $200,000. CD 9/28/59.

Minnesota—RURAL TELEPHONE LINES—BA 6/29—Paul Bunyan Rural Telephone Cooperative, Bemidji, Minn., 233 mi. rural telephone lines, Beltrami, Itasca and Koochiching Counties. $250,000. Plans deposit $10. Communication Consultants, Inc., 1114½ Main Ave., Fargo, N. D., engrs. CD 12/14/59.

IOWA—BA 6/28—State Hy. Comm., Ames,
Allamakee Co.—2 rein.-conc. box culverts, also, 24 x 30 ft., concrete slab bridge on Farm to Market Rd., Sec. 23 and 25-98-3W, FM-524.
2 rein-conc. box culverts, also, 24 x 174 ft., continuous concrete slab bridge on Farm to Market Rd., Sec. 35 and 36-97-4W, SN-1716.
2 rein-conc. box culverts on Farm to Market Rd. on west line Sec. 23-98-6W, SN-2537.
Benton Co.—19 rein-conc. box and pipe culverts and extensions at various locations on U. S. 218 from U. S. 30 north to point on west line Sec. 4-84-10, FN-58.
Bremer Co.—24 x 100 ft. continuous concrete slab bridge on Farm to Market Rd. on west line SW¼ Sec. 23-93-14, SN-1494.
Buchanan Co.—2 rein-conc. box culverts, also, 24 x 125 ft. continuous concrete slab bridge on Farm to Market Rd. from near center Sec. 25-89-9 east to near E¼ corner Sec. 28-89-8, SN-1258.
Cass Co.—2 rein-conc. box culvert extensions, also, 26 x 42.5 ft. pretensioned prestressed concrete beam bridge Farm to Market Rd. from S.W. corner Sec. 15-76-34 east to S.E. corner Sec. 13-76-34, SN-1996.
Clayton Co.—rein-conc. box culvert extensions on Farm to Market Rd. in Sec. 27-92-4W, SN-2834.
Crawford Co.—11 rein-conc. box culverts at various locations on Farm to Market Rd. from S.W. corner Sec. 12-83-37 northerly to West Side, SN-1398.
Davis Co.—20 x 30 ft., concrete slab bridge on Farm to Market Rd. in SE¼ SE¼ Sec. 26-70-14, FM-498.
Dubuque Co.—twin 10 x 10 x 38 ft. rein-conc. box culvert on Farm to Market Rd. in N½ Sec. 31-90-1E, SN-970.
Jasper Co.—2 rein-conc. box culvert extensions on Iowa 14 in Sec. 33-80-19, FN-1124. Foregoing under $88,000 each.
23 rein-conc. box and pipe culverts and extensions, also, twin 40 x 134 ft. 2 in. pretensioned prestressed concrete beam overhead crossing, also twin 30 x 232 ft. continuous I-beam bridge, also, 24 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, also, 24 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, also, 24 x 215 ft. 5 in. pretensioned prestressed concrete beam bridge, on Interstate Rte. 80 from Sec. 5-79-19 east to Sec. 2-79-19, I-IG-80-5(11)167. Over $88,000.
Jones Co.—raise and widn. 20 x 29 ft. 3 in. I-beam bridge to 28 ft. roadway, also 28 x 60 ft. prestressed concrete beam bridge, also, 28 x 80 ft. continuous concrete slab bridge on Farm to Market Rd. on west line Sec. 18 and 19-83-3W, SN-2180.
Keokuk Co.—rein-conc. box culvert extension on Iowa 22 just east of jct. with Iowa 21, FN-546.
Mitchell Co.—rein-conc. box culvert extension, also 24 x 55 ft. pretensioned prestressed concrete beam bridge, on Farm to Market Rd. from east jct. U. S. 218 and Iowa 9 north to N.W. corner Sec. 3-98-16, SN-2721.
Poweshiek Co.—28 x 120 ft. continuous concrete slab bridge, Farm to Market Rd. on Town of Malcom, SN-2293.
Shelby Co.—24 x 125 ft. continuous concrete slab bridge, Farm to Market Rd. on south line SE¼ Sec. 6-78-37, SN-1635. Foregoing under $88,000 each. L. M. Clausson, Ames, ch. engr.

IOWA—BA 6/28—State Hy. Comm., Ames,
Adair and Cass Counties—surf. 1.01 mi. Farm to Market Rd. along west line Sec. 31-76-33, FM-508.

Adams Co.—surf. 7.297 mi. Farm to Market Rd. from W¼ corner Sec. 10-72-38 north to N.W. corner Sec. 3-73-38, SN-1717.

Allamakee Co.—surf. 0.687 mi. Iowa 373 from point on west line Sec. 15-97-4 SE into Waterville, FN-1107.
grading 0.264 mi. Farm to Market Rd. on south line SW¼ Sec. 9-98-6W, SN-2860.
grading 2.505 mi. Farm to Market road from near center Sec. 36-90-4W NW to point on east line NE¼ Sec. 27-97-4W, SN-1716.
grading 3.615 mi. Farm to Market Rd. from S¼ corner SW¼ Sec. 9-98-6W E and S to S.E. corner Sec. 22-98-6W, SN-2537.
Appanoose Co.—grading 3.511 mi. Farm to Market road from N.E. corner Sec. 27-70-18 S and E to Rathbun, S-117(4).
grading 3.929 mi. Farm to Market Rd. from Sec. 15-69-19 to near SE¼ Sec. 18-69-18, SN-632.
Benton Co.—surf. 2.702 mi. Iowa 199 out of Van Horen to U. S. 218, FN-1114.
surf. 7.574 mi. on relocation of Iowa 202 from U. S. 218 into Shellsburg, FN-660.
pavement patching at various locations on U. S. 218 from U. S. 30 to Vinton, FN-58. Foregoing under $88,000 each.

b. conc. pavement 2.666 mi. Iowa 198 out of Garrison to U. S. 218, F-1060(2). Over $88,000.

Black Hawk Co.—surf. 3.165 mi. Iowa 297 out of Gilbertville to U. S. 20, FN-1000. Under $88,000.

b. conc. resurf. 5.166 mi. Iowa 57 and 58 from near Sec. 31-89-14 into Cedar Falls, FN-317.

b. conc. resurf. 18.542 mi. Iowa 57 out of Grundy Center to point on north line NW¼ Sec. 1-88-15, P-1077.

Boone Co.—b. conc. resurf. 11.921 mi. U.S. 169 from north end C. & N.W. Railroad overhead crossing near jct. with U.S. 30 to Webster Co. line, FN-350.

Bremer and Chickasaw Counties—b. conc. resurf. 13.492 mi. U.S. 63 from near W¼ corner Sec. 1-91-13 to near N¼ corner Sec. 1-93-13, FN-367.

Bremer Co.—b. conc. resurf. 7.11 mi. Iowa 3 out of Waverly to US 63, FN-88. Foregoing over $88,000 each.

b. conc. resurf. 0.527 mi. US 218 in Waverly from 1 Ave. S.W. to 8 Ave. S.W., P-302.

Buchanan Co.—grading 3.488 mi. Farm to Market Rd. from center Sec. 25-89-9 to E¼ corner Sec. 28-89-8, SN-1258.

grading 4.826 mi. Farm to Market Rd. from near E¼ corner SE¼ Sec. 2-89-10 to N.E. corner Sec. 14-90-10, SN-2555.

grading 1.494 mi. Farm to Market Rd. from N¼ corner SE¼ Sec. 29-89-8 to US 20, SN-2857.

Cass Co.—grading 2.99 mi. Farm to Market Rd. from S.W. corner Sec. 15-76-34 to S.E. corner Sec. 13-76-34, SN-1996.

Cedar Co.—grading 5.922 mi. Farm to Market Rd. from Sec. 5-80-4W to SW corner Sec. 32-80-4W, SN-960. Foregoing under $88,000 each.

Cherokee and O'Brien Counties—c. conc. pavement 10.769 mi. Iowa 143 from I. C. Railroad tracks to Iowa 10, F-1036(3). Over $88,000.

Chickasaw Co.—b. conc. resurf. 1.905 mi. Iowa 346 out of Nashua to near Bradford, FN-984.

rolled stone base and bit. surf. 2.221 mi. Farm to Market Rd. from Sec. 29-97-12 into Jericho, SN-1796. Foregoing under $88,000 each.

b. conc. pavement 2.364 mi. Iowa 393 out of Ionia to US 18, F-1055(3). Over $88,000.

Clayton Co.—grading 0.927 mi. Farm to Market Rd. from Sec. 19-92-2W to US 52 in Guttenberg, SN-813.

grading 2.257 mi. Farm to Market Rd. from point on east line of SW¼ NW¼ Sec. 27-92-4 into Elkport, SN-2834. Foregoing under $88,000.

Clinton and Scott Counties—b. conc. resurf. 5.565 mi. US 61 from center Sec. 18-80-4E to US 30 in DeWitt, P-1076. Over $88,000.

Clinton Co.—b. conc. pavement 2.353 mi. Farm to Market Rd. out of Delmar to Sec. 27-83-3E, SN-1052.

b. conc. pavement 2.285 mi. Farm to Market Rd. from Sec. 27-83-3E to US 61, Proj. CO P-103. Foregoing under $88,000 each.

Crawford and Monona Counties—b. conc. resurf. 18.422 mi. Iowa 141 out of Ute to Sec. 3-83-39 near Denison, FN-1059. Over $88,000.

Crawford Co.—grading 4.578 mi. Farm to Market Rd. from Sec. 12-83-37 into West Side, SN-1398.

Davis Co.—grading 5.961 mi. Farm to Market Rd. from Sec. 8-68-12 to center Sec. 24-68-12, FM-493.

grading 1.539 mi. Farm to Market Rd. from Belknap to Sec. 25-70-14, FM-498. Foregoing under $88,000 each.

Decatur Co.—b. conc. pavement 4.427 mi. Iowa 204 from Iowa 2 to C. B. & O. Railroad, Garden Grove, FN-354. Over $88,000.

Delaware Co.—erosion control 1.755 mi. on relocation US 20 from Sec. 35-89-3W to Dyersville, FN-1072. Under $88,000.

b. conc. resurf. 9.095 mi. US 20 from Manchester through Earlville, FN-4. Over $88,000.

Dubuque Co.—erosion control 6.510 mi. on relocation US 20 from Delaware Co. line into Farley, F-305 (10). Under $88,000.

b. conc. pavement 5.066 mi. Farm to Market Rd. from Farley to center Sec. 17-89-1W, SN-603. Over $88,000.

grading 1.504 mi. Farm to Market Rd. from Sec. 30-90-1E to US 52, SN-970.

Fremont Co.—grading 0.99 mi. Farm to Market Rd. on west line Sec. 11-68-40, SN-2699.

Grundy Co.—stockpile at Grundy Center maintenance yard, M-1904. Foreging under $88,000 each.

b. conc. resurf. 10.09 mi. Iowa 14 and 57 from Sec. 36-87-16 into Grundy Center, P-48. Over $88,000.

Hamilton Co.—stockpile in maintenance yard at Jewell; Stanhope; Iowa 60 S. of Webster City; and Iowa 175 east of Ellsworth, M-1908.

Hardin Co.—stockpile on Iowa 215 near Gifford; Iowa 175 E. of Radcliffe; Iowa 299 S. of jct. with Iowa 57; and Iowa 118 N. of jct. with Iowa 57.

Howard Co.—shouldering 6.012 mi. Farm to Market Rd. from Sec. 6-97-14 into Elma, SN-232.

shouldering 8.514 mi. Farm to Market Rd. out of Cresco into Florenceville, SN-233.

shouldering 3.257 mi. Farm to Market Rd. from Sec. 20-100-12 to Minnesota State Line, SN-2060. Foregoing under $88,000.

Humboldt Co.—b. conc. resurf. 6.084 mi. US 169 from Webster Co. line to Iowa 3, FN-117.

b. conc. pavement Iowa 222 out of Bode to Iowa 44, FN-1097. Foregoing over $88,000 each.

Iowa Co.—surf. 7.154 mi. Iowa 21 from US 6 to Iowa 212, FN-505.

side ditch grading 0.871 mi. Iowa 21 from S. Jct. Iowa 212 to Iowa River, FN-242.

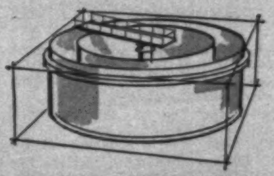
grading 1.529 mi. Farm to Market Rd. from Sec. 31-79-10 to Iowa 149, SN-277.

grading 0.72 mi. Farm to Market Rd. out of Millersburg to near S¼ corner Sec. 5-78-11, SN-592.

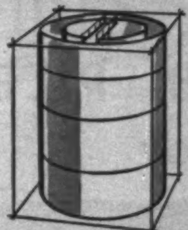
grading 1.022 mi. Farm to Market Rd. from Sec. 5-78-11 to Sec. 4-78-11, SN-2573. Foregoing under $88,000.

Process Trends / from DORR-OLIVER

A SERVICE TO THE PROCESSING INDUSTRIES



"PACKAGED UNITS" SOLVE PLANT WATER TREATMENT AND SEWAGE PROBLEMS



The trend to dispersal of industrial plants and the location of new factories in previously undeveloped areas often involves problems of water treatment and sewage disposal. Even when plants have been long established, the same problems may arise as existing facilities become inadequate or conditions change in the surrounding area.

A ready solution is found in the new "packaged" treatment units now available from Dorr-Oliver. Essentially, these offer all the advantages of conventional, large scale systems in a compact, easily installed form suitable for individual plant installations. Basic equipment for each unit is all designed into a single tank. This "unitized" approach not only produces simple, easily maintained units, but also results in relatively low cost.

The Dorrco PeriFilter System, for example, combines a pre-treatment mechanism and a rapid sand filter to provide a continuous supply of purified water. Depending on the pre-treatment method used, the unit will remove hardness, turbidity, color and/or iron and manganese. Operation can be manual, semi-automatic or fully automatic.

The Dorr-Oliver CompleTreator is a complete sewage treatment unit, operating on the modern Biofiltration principle. In a single welded steel tank, it combines processes that normally would require five tanks. It is so compact that it can be shipped complete by rail or truck, yet has a treatment capacity for 150 population equivalent. Where greater capacity is required, two or more units can be readily installed, or consideration may be given to other Dorr-Oliver equipment.

The development of treatment plants for water, sewage and industrial wastes has long been a Dorr-Oliver specialty. If you'd like to learn more about such equipment, with particular application to your own special problems, just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

Dorr-Oliver offers a wide range of equipment, methods and complete systems for the processing industries. Examples include:

WATER AND WASTE TREATMENT • ROASTING • DRYING • CLASSIFICATION
THICKENING • SCREENING • FILTRATION • CLARIFICATION • WASHING
AGITATION • CENTRIFUGATION • ION EXCHANGE • PUMPING

Dorrco, PeriFilter, CompleTreator — Reg. T.M. U.S. Pat. Off.

Jasper Co.—grading 3.66 mi. Interstate Rte. 80 from Sec. 5-79-19 to east line Sec. 2-79-19, I-IG-80-5(11)167. Over $88,000.

grading 0.551 mi. Iowa 14 from Sec. 5-79-19 into Newton, FN-1124.

Jefferson Co.—surf. 1.584 mi. Farm to Market Rd. out of Libertyville to Sec. 19-71-10, SN-891. Foregoing under $88,000 each.

Johnson Co.—c. conc. pavement wid'n. 1.982 mi. US 6 from west jct. US 218 to Clear Creek bridge in Coralville, U-128(4). Over $88,000.

Keokuk Co.—c. conc. pavement 1.996 mi. Farm to Market Rd. from Gibson to Sec. 9-77-13, S-1916(3).

grading 8.805 mi. Farm to Market Rd. from Sec. 19-77-11, SN-1118.

Mahaska Co.—erosion control 2.372 mi. Iowa 92 from Oskaloosa to Sec. 15-75-15, FN-293. Foregoing under $88,000.

Marion Co.—b. conc. 3.917 mi. Farm to Market Rd. from Sec. 18-74-20 to Iowa 14, S-180(4). Over $88,000.

b. conc. pavement 2.137 mi. Farm to Market Rd. from Iowa 60 into Pershing, S-2197(4).

Marshall Co.—stockpile on US 30 W. of LeGrande; Jct. Old US 30 and New US 30 W. of Jct. with Iowa 64, M-1905. Foregoing under $88,000 each.

Mills Co.—c. conc. pavement 5.856 mi. Iowa 242 from US 34 into Silver City, FN-567. Over $88,000.

Monona Co.—erosion control 0.488 mi. Iowa 37 and 175 Sec. 8 and 9-83-44, FN-426.

erosion control 0.436 mi. Iowa 141 on Sec. 23-84-42, F-795 (4).

Polk Co.—stockpile at new maintenance yard N. of Interstate on US 69; and Des Moines, M-1906. CD 8/28/58.

surf. 4.476 mi. Farm to Market Rd. from Sec. 23-78-23 to Iowa 163, SN-334. CD 8/28/58.

surf. 2.453 mi. Farm to Market Rd. from Sec. 35-80-25 to point on S. line SW¼ Sec. 32-80-24, FM-532, CD 8/28/58.

surf. 6.108 mi. Farm to Market Rd. from Sec. 25-80-25 to center Sec. 8-80-25, SN-2824. CD 8/28/58.

surf. 2.988 mi. Farm to Market Rd. from Sec. 23-79-23 S. to Iowa 163, SN-2876. CD 8/28/58. Foregoing under $88,000 each.

c. conc. pavement 6.21 mi. Iowa 316 out of Runnells to Iowa 163, F-1051 (2). Over $88,000. CD 8/28/58.

Poweshiek Co.—surf. (36 items), 89.30 mi. on various Farm to Market Rds., FM-536.

grading 1.846 mi. Farm to Market Rd. from Sec. 27-80-15 to C.R.I. & P. Railroad in Malcom. SN-2293.

Ringgold Co.—rolled stone base and bit. surf. 0.208 mi. Farm to Market Rd. from Iowa 2 North, SN-2055.

Story Co.—stockpile in maintenance yard at Ames; and 2 mi. east of Nevada, M-1907.

Warren Co.—erosion control 6.036 mi. Iowa 206 from US 65 into Lacona, F-1089 (1).

stockpile 1½ mi. E. of jct. of US 69 and Iowa 349, M-1910.

Webster Co.—surf. at various locations on relocation of US 169 from US 20 to Iowa 5, F-FG-422 (3).

c. conc. pavement 0.423 mi. Iowa 5 from Sec. 14-89-29. FN-13. Foregoing under $88,000 each.

c. conc. pavement 0.375 mi. Iowa 5 from Sec. 25-89-29 to 3 St. and 2 Ave. S. in Fort Dodge, U-UG-13 (9).

c. conc. pavement 2.192 mi. relocation of US 169 from jct. with US 20 SW to Fort Dodge to jct. Iowa 5 and US 169 near Sec. 13-89-29, F-U-UG-422 (6).

c. conc. pavement 0.503 mi. US 20 at jct. with US 169 SW of Fort Dodge, FN-475. Foregoing over $88,000 each.

b. conc. resurf. 1.759 mi. US 169 from Humboldt Co. Line S, FN-422. Under $88,000.

b. conc. resurf. 10.381 mi. US 169 from Boone Co. line north, North of Harcourt, P-673 (1).

b. conc. resurf. 11.986 mi. US 169 from Sec. 25-87-29 north, Sec. 31-89-29, P-673 (2). Foregoing over $88,000 each.

Woodbury Co.—erosion control 0.552 mi. Iowa 141 F-2 (20).

erosion control Iowa 140 along west line SW¼ Sec. 3-88-44, FN-969.

c. conc. pavement 0.425 mi. US 20 (Grand Ave.) in Sioux City from Pearl St., U-604 (2).

c. conc. pavement 1.083 mi. Iowa 140 from Sec. 17-87-45 SE into Climbing Hill, FN-969. Foregoing under $88,000 each.

c. conc. pavement 6.437 mi. Iowa 140 from Sloan east to Hornick, FN-1040. Over $88,000. L. M. Clausson, Ames, ch. engr.

MONTANA—BA 6/29—State Hy. Comm., Helena,

Madison, Silver Bow, and Jefferson Counties—244.5 ft. prestressed concrete bridge over Jefferson River between Silver Star and Waterloo.

Roosevelt Co.—furnish and erect 3 structural plate pipe archts and other work on Culbertson-McCabe-Bainville Rd., 5 mi. west, 3 mi. west and 2 mi. east of McCabe.

MONTANA—BA 6/29—State Hy. Comn., Helena,

Carbon and Stillwater Counties—aggr. surf., plant mix bit. surf. 7.72 mi. Red Lodge-Columbus Rd.

Cascade Co.—plant mix bit. surf. and constr. signs 0.12 mi. Great Falls-Fort Benton refinery intersection road, Great Falls.

Dawson and McCone Counties—aggr. surf., plant mix bit. surf. 9.1 mi. Circle-Sidney Rd.

Deer Lodge Co.—grade, aggr. surf., plant mix bit. surf. and seal 6.08 mi. Anaconda east road.

Glacier Co.—grade, aggr. surf., road mix bit. surf. and small drainage structures and 121.5 ft. prestressed concrete beam bridge 0.86 mi. Babb-Piegan Rd.

Powell Co.—raise grades, aggr. surf. and plant mix bit. surf. 29.812 mi. Montana 20 from Missoula Powell county line to Powell-Lewis and Clark county line.

† **Arkansas**—BA 6/30—Desha Co. Drainage Dist. No. 5, 100 West Burnett, Dumas, 87,854 cu. yd. excavation channels and laterals in Randolph-Walnut Lake Watershed, Randolph-Walnut Lake, Desha Co. Bids May 2 rejected. CD 4/14.

† **North Dakota**—TRANSMISSION LINE—BA 7/19—Bureau Reclamation, Dpt. Interior, Fargo, 110 mi. Jamestown-Grand Forks, 115 kv transmission line No. 1, Missouri River Basin Proj., Transmission Div., DC 5353. CD 9/13/57.

† **Wyo., Cheyenne**—WARREN I PROCESS GAS FACILITY CHANGES—BA 6/30—U. S. Eng., 1709 Jackson St., Omaha, Neb., Warren I Process Gas Facility Changes, F. E. Warren Air Force Base, ENG-25-066-60-161, $55,000. CD 10/21.

COLORADO—BA 7/1—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Denver Co.—structures, approaches 0.022 mi. Proj. U 016-1 (16), $104,000. Mark U. Watrous, 4201 E. Arkansas St., Denver, State Hy. Engr.

COLORADO—BA 7/1—State Hy. Dpt., 4201 E. Arkansas St., Denver,

Denver Co.—grading, structures, stab., b. conc. surf. 3.674 mi. E. 56th Ave. from Dahlia to Havana Sts., Proj. I 70-4 (12) 288, $612,000.

Jefferson Co.—grading, structures, plant mixed asph. surf. 0.894 mi. Proj. US 0086 (3). $114,000.

† **Okla., Clinton**—SITEWORK—BA 7/5—Base Procurement Office, Clinton-Sherman Air Force Base, offsite work for 300 unit Armed Services Housing Proj., Clinton Sherman Air Force Base, IFB 34-611-60-41B. CD 4/22.

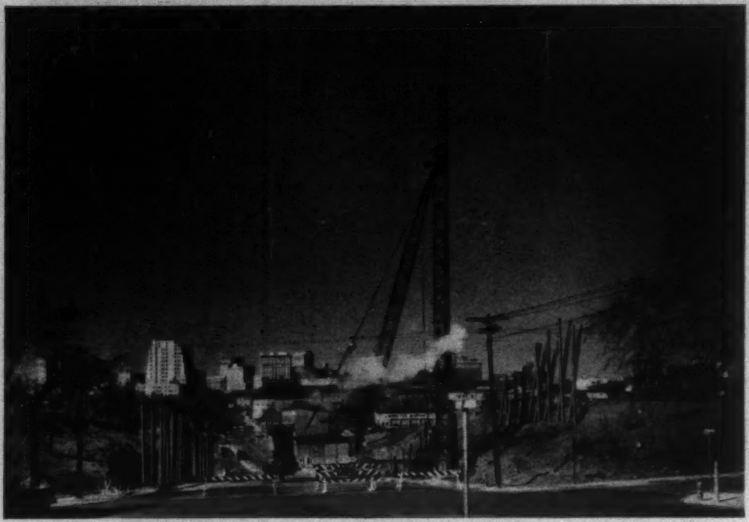
Minn., Alexandria—BA 7/6—Douglas County, grading 4.3 mi. between County State Aid Hy. 24, 1.5 mi. east of Melby and 0.5 mi. east of Trunk Hy. 78 on north line of Douglas Co. SP 21-601-03 (CSAH 1), Minn. Proj. S 6430(11) and 0.5 mi. between 0.5 mi. east of Trunk Hy. 78 and Trunk Hy. 78, 12 mi. south of Battle Lake, Otter Tail Co. S.A.P. 56-664-01. $100,000. Plans deposit $2.90. P. G. Hanson, co. hy. engr.

† **Arkansas** — BA 7/12 — U. S. Eng., P.O. Box 267, New Orleans, La., installing culvert through levee, Sta. 492 plus 43, on left descending bank of Red River, Red River Levees, Hempstead Co. Levee Dist. No. 1, CIVENG-16-047-60-226. Under $25,000. CD 4/22/44, under Illinois-Louisiana.

North Dakota—TELEPHONE SYSTEM—BA 7/14—Iowa-Illinois Telephone Co., Devils Lake, N. D., approx. 24.8 mi. aerial plant, 227.4 mi. buried plant and 10.7 mi. service, Starkweather, Warwick and Cendo exchanges, Proj. Iowa 556 B, North Dakota Section. Plans deposit $5. Hicks & Ragland, P.O. Box 3008, 3218 34 St., Lubbock, Tex., consult. engrs. CD 2/21/57.

Kan., Frankfort—SWIMMING POOL—BA 7/19—City, City Hall, rejuvenation swimming pool. Plans deposit $10. Harold Hoskins & Assocs., 1630 Que St., Lincoln, Neb., engrs. Bids Mar. 7, rejected. CD 3/3.

In Atlanta . . . C. L. GUILD DRIVES 772 COBI PILES *For Atlanta Expressway*



ATLANTA, like so many cities, is seeing the completion of a modern expressway designed to help unsnarl its traffic problem. One of the principal projects of the new Atlanta Expressway, shown in the above picture, is the four bridges which form part of the downtown connector.

Gentry and Thompson, Atlanta bridge builders, hold the $783,176 contract. To drive the 772 cast-in-place Cobi Piles to support the piers and abutments of the four bridges, Gentry and Thompson secured the experienced services of C. L. Guild Construction Co. Length of the 772 mandrel driven piles totaled 30,000 feet in length.

Why not call C. L. Guild and discuss your pile driving requirements. You'll find C. L. Guild willing and able to put their many years of experience to work for you.

C. L. GUILD CONSTRUCTION CO., INC.
90 Water Street, East Providence 14, R. I.
BOSTON, MASS. WASHINGTON, D. C. HOUSTON, TEXAS
SYRACUSE, N. Y. ATLANTA, GA. KANSAS CITY, MO.

† **Tex., Sweetwater** — OPERATIONS ADDN. — BA About 7/21—U. S. Eng., 100 W. Vickery St., Fort Worth, operations bldg. addn., Sweetwater Air Force Station, ENG-41-443-60-42, $25,000.

† **N. M., Roswell**—STRATEGIC MISSILES, GAM 77—BA About 8/3—U. S. Eng., P. O. Box 1538, Albuquerque, strategic missiles, GAM 77, incl. approx. 150 x 160 ft., prefabricated metal missile service shop; approx. 62 x 75 ft., rein.-conc. and masonry run-up shop; ammonia transfer facilities; wet-burning process sewage treatment plant, 120,000 gal. steel storage water tank, with 16 x 20 ft. prefabricated metal pump house, approx. 6,000 ft., 3 in. gas line; approx. 7,000 ft. underground electrical power line; parking; access drive paving, Walker Air Force Base, ENG-29-005-61-3. $500,000. Plans deposit $1. CD 1/29.

BUILDINGS—BA

Minn., Mankato—STEAM GENERATOR UNITS—BA 6/28—State Dpt. of Admin., 19 State Capitol, St. Paul, Minn., two steam generator units, State College. $90,000. Plans deposit $30. R. W. Evans & Assocs., 337 Plymouth Bldg., Minneapolis, Minn., engrs. CD 7/23/59.

† **Kan., Fort Leavenworth**—EMERGENCY GENERATOR—BA 6/28—U.S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., emergency generator facilities. IFB 60-105. CD 9/5/58.

Colo., Thornton—SCHOOL—BA 6/28—School Dist. No. 12, 810 Eppinger Blvd., Thornton, 1 story, 33,425 sq. ft. Northglenn elementary school, Westminster, $450,000. Atchison, Kloverstrom, 257 Josephine St., Denver, archts. CD 12/23.

† **Kan., Fort Leavenworth**—COMMUNICATIONS BLDG.—BA 6/29—U.S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., communications bldg. IFB 60-102. CD 9/5/58.

Minn., Lake City—HOSPITAL ADDN.—BA 6/29—City, City Hall, hospital addn. Extended date. $525,000. Haarstick-Lundgren & Assocs., N-212 1st National Bank Bldg., St. Paul, Minn., assoc. archts. E. W. Barber, 712 A. Lakeshore Dr., Lake City, Minn., archt. CD 5/25.

† **Colo., Denver** — MODIFYING BUILDING — BA 7/1 — U. S. Eng., 1709 Jackson St., Omaha, Neb., modifying Bldg. 1606, Rocky Mountain Arsenal, ENG-25-066-60-170, $70,000. CD 10/20/54.

Iowa, Keosauqua—U.S. POST OFFICE—BA 7/5—General Services Bldg., 2306 East Bannister Rd., Kansas City 10, Mo., 2 story, concrete fdns., steel frame U.S. Post Office, Proj. No. 13905. CD 8/31.

Colo., Durango—SCHOOL—BA 7/7—School Dist. No. 9-R, 1 story, 64,000 sq. ft. Junior High School, north Durango, $925,000. Wheeler & Lewis, 2215 W. 32nd St., Denver, archts. CD 12/24.

Wyo., Laramie—GARAGE AND WAREHOUSE, etc.—BA 7/8—University of Wyoming Campus, 2 story, bsmnt., 90 x 215 ft. garage and warehouse, $566,000, Holzinger & Schropfer, 2301 Oxford Lane, Casper, archts., Volk & Harrison, 2305 Oxford Lane, Casper, struc. engrs., K. J. Murray, c/o archt., mech. engr., CD 5/13/59; 3 story, bsmnt., 50,000 sq. ft. commerce and industry, $975,000, Kellogg & Kellogg, 2309 Warren Ave., Cheyenne, archts., CD 12/30/58.

▲ **Tex., Houston**—TRADE CENTER—BA 7/14—Port Commission Navigation Dist., 1519 Capitol Ave., Houston, 11 story steel, glass world trade center $2,750,000. Wilson, Morris, Crain & Anderson, 3330 Graustark St., Houston, archts. CD 8/28/57, under Unclassified.

BUILDINGS—SLC

Kan., Salina—DORMITORY—Kansas Wesleyan University, North Santa Fe St., HHFA Proj. KAS-14-CH-50, soon lets contract, 3 story, bsmnt. 39 x 225 ft. brick, concrete and steel men's dormitory. Plans deposit $50. Wilson & Co., 631 E. Crawford St., Salina, Kan., archts.-engrs. CD 12/30/59.

Tex., Houston—WAREHOUSE—Southwestern Drug Corp., 8000 Empire Freeway, Dallas, soon lets contract warehouse, $350,000. Jack Corgan & Assocs., Tower Petroleum Bldg., Dallas, engrs. CD 5/2.

HEAVY CONSTRUCTION—LB & CA

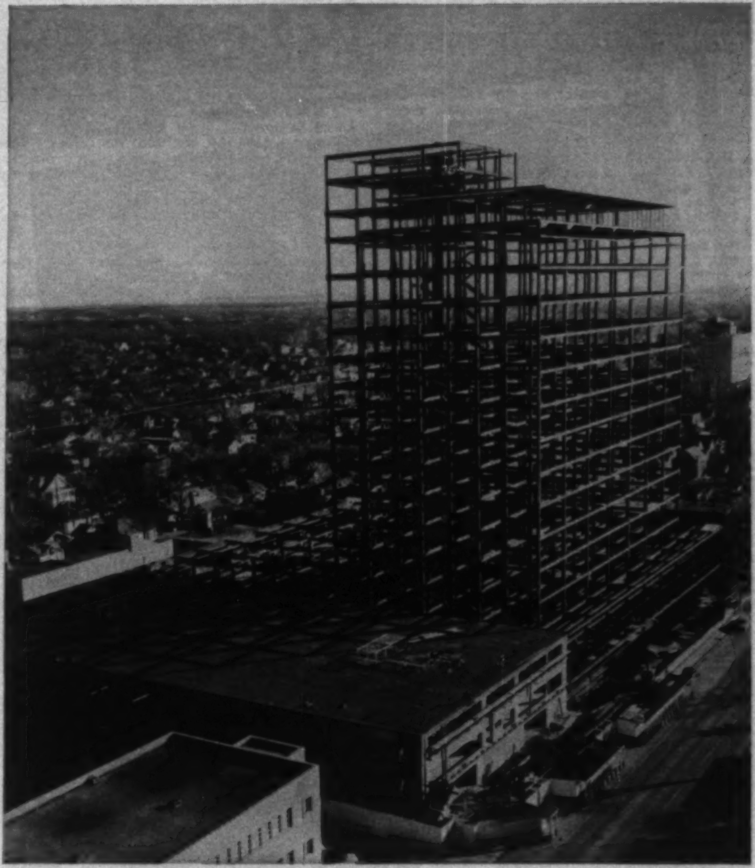
P. H. Thompson & Son, Frost, Minn., CA **$116,558,** grade, gravel surf. crushed rock subbase 9.5 mi. near Elkton; 3 mi. between CSAH 4 and CSAH 3; 2.5 mi. between County Rd. 55, CSAH 3 and CSAH 13, AUSTIN, MINN. Mower Co., Austin, Minn. Bids May 23.

Steenberg Constr. Co., 1371 Marshall Ave., St. Paul, Minn., LB **$430,666** (6 bidders) sewerage sys. imprvs., sewage treatment plant addn. BRAINERD, MINN. City, City Hall, Brainerd, Minn. Bids June 7 CD 5/25.

J. W. Alexander, 3601 Alabama Ave., St. Louis Park, Minn., LB **$123,039** (4 bidders) 110,000 sq. yd. bit. stab. base, 20,600 cu. yd. excav., 20,600 cu. yd. grav. stab. base and 5,974 cu. yd. bit. surf., NEW BRIGHTON, MINN. Village, Village Hall, New Brighton, Minn. Bids June 7.

Northwestern Constr. Co., Box 301, Hopkins, Minn., LB **$99,352,** (7 bidders), storm sewer and water, No. 36, FRIDLEY, MINN. Village, Village Hall, Fridley, Minn. Bids June 6. CD 5/19.

Montgomery Constr. Co., St. Croix Falls, Wis., LB **$116,484** (4 bidders) storm sewer sys., NEW HOPE (P. O. MINNEAPOLIS 27), MINN. Village, Village Hall, New Hope, Minn. Bids June 6. CD 5/26.



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CIRCLE 243 ON READER SERVICE CARD

HEAVY CONSTRUCTION—LB & CA

MISSOURI—State Hy. Dpt., Jefferson City,
Mo.—**Lee A. Ball Constr. Co.**, 2114 South Jefferson, Springfield, Mo., CA **$110,416**, 41 ft, 49.5 ft, 49.5 ft., 41 ft. cont. I-beam spans, Sta. 9 plus 62, Greene Co. CD 6/8 under LB.
Mo.—**M. E. Gillioz**, Monett, Mo., CA **$202,198**, 125 ft, 150 ft. 125 ft. cont., 70 ft. single plate girder, Sta. 267 plus 62, Cole Co. Bids May 27 Awarded June 4 CD 6/8-under LB.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,
Mo.—**M. E. Gillioz**, Monett, Mo., CA **$588,093**, graded earth, culverts, 2-24 ft. concrete pavement 1.273 mi. Cole Co.; CA $1,227,528, graded earth, culverts, 2-24 ft. concrete pavements 2.943 mi. Cole Co.,
Mo.—**Hall & Riley Quarries & Constr. Co.**, 400½ Main St., Boonville, Mo., CA **$609,215**, graded earth, culverts, b. conc. 5.061 mi., Douglas Co.,
Mo.—**Porter DeWitt Constr. Co., Inc.**, P. O. Box 279, Popuar Bluff, Mo., CA **$920,617**, graded earth, culverts, two high type pavements 2.419 mi. Butler Co. Bids May 27 Grand total $3,345,453 Awarded June 4 CD 6/8 under LB.

Missouri Utilities Co., Cape Girardeau, Mo., Owner Builds, **$275,385**, 16 mi. 3 in. natural gas line between Advance and Lutesville, MISSOURI.

▲ **Bushman Constr. Co.**, St. Joseph, Mo., CA **$3,045,-605** Red Willow Dam on Red Willow Creek, tributary of Republican River, N. of McCook NEBASKA, Bureau Reclamation, Dpt. Interior, McCook, Neb., Bids May 24. CD 5/27 under LB.

Purtzer & Dutton, P.O. Box 472, Norton, Kan., CA **$187,128**, est. $187,200, sewage treatment plant, BELLEVUE, NEB. City, City Hall, Bellevue, Neb. Bids May 23, awarded June 3. CD 9/16/58.

Arnold Swanson Co., Hy. 6 and Hastings St., Hastings, Neb., LB **$194,104**, est. $201,705, concrete paving 40 blocks, etc., NORFOLK, NEB., City, City Hall, Norfolk, Neb., Bids May 18. Don Hyde, City Hall, city engr.

KANSAS—State Hy. Comn., State Office Bldg.,
Reno Constr. Co., Inc., Box 61, Overland Park, Kan., CA **$530,028**, grading 8.522 mi. SP 7-46 F 081-1 (3), Johnson Co. Bids May 25. CD 6/2, under LB.

KANSAS—State Hy. Comn., State Office Bldg., Topeka, rejected bids May 25, 88 ft., 2-112 ft., 88 ft. steel girder, Br. Sta. 15 plus 55, SP 11 S 1388(1), Cherokee Co. CD 6/2, under LB.

† **Barton & Sons Co.**, P.O. Box 171,, Edwardsville, Ill., CA **$233,664**, repair taxiway 6-24 & 8, McConnell Air Force Base, IFB 14-614-60-38, WICHITA, KAN. Base Procurement Office, McConnell Air Force Base, Wichita, Kan. Bids Apr. 5. CD 3/18.

† **U. S. Eng.**, Box 61, Tulsa, Okla., cancelled bids to have been opened June 30, relocating Hy. 51, Keystone Reservoir, ENG-34-066-60-133, OKLAHOMA. CD 6/7.

U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., cancelled bids to have been opened May 4, modifying dark rooms, operations bldg., Cut Bank Air Force Station, ENG-45-108-60-113, CUT BANK, MONT. CD 4/11.

† **M. E. Gilloiz Co.**, Monett, Mo., LB **$992,545** est. $884,638, Section 11, relocating county roads, Eufaula Dam area, ENG-34-066-60-118, OKLAHOMA. U. S. Eng., Box 61, Tulsa, Okla. CD 6/7, under LB.

Ajax Constr. Co., 3110 N. May Ave., Oklahoma City, Okla., LB **$173,059**, est. $198,929, Section III, two concrete, steel bridges, county roads, Eng. 34-066-60-118 (Oklahoma).

McKown & Sons, P. O. Box 785, Austin, Tex., LB **$143,135** (5 bidders) asph. street paving, AUSTIN, TEX. City, City Hall, Austin, Tex. Bids May 31. CD 3/30/56.

† **Solar Constr. & Eng. Co.**, Box 12481, Houston, Tex., LB **$401,930** Base bid, steel frame HANGAR, concrete apron, paving, fueling, heliport, Eng 41-243-60-30 FORT SAM HOUSTON, TEX. U. S. Eng., P. O. Box 1229 Galveston, Tex. Bids May 25. CD 5/2.

George Marble Constr. Co., 213 Lake Park Shop Center, Dallas, Tex., LB **$124,752** (8 bidders) SHOPS and warehouse, GARLAND, TEX. City, City Hall, Garland, Tex. Bids May 31. CD 12/14/59.

† **Federal Pacific & Electric Co.**, 333 Brokaw Rd., Santa Clara, LB **$95,923** (8 bidders), two 230 kv. power circuit breakers for Fargo Substation, Missouri River Basin Proj., DS5325, NORTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bldg. 1a, Denver Federal Center, Denver, Colo. Bids June 7. CD 5/4.

† **Westinghouse Electric Corp.**, 55 W. 5th Ave., Denver 4, Colo., CA **$91,790**, Schedules land 2-one 230 kv and one 115-kv power circuit breaker for Jamestown Substation (stage 05) Missouri River Basin Proj., Spec. DS 5287 NORTH DAKOTA Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Apr. 12. CD 4/20 under LB.

† **Swanson & Youngdale**, 737 France Ave. No., Minneapolis, Minn., LB **$77,599** est. $108,352 (3 bidders) rehabilitation of Bldgs. for AFBMD Field Office, Ellsworth Air Force Base. ENG 25-066-60-120, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 2 CD 5/11.

† **H. Halverson Inc.**, 11 N. 5th St., Grand Forks, N. D., LB **$418,219**, est. $88,556, (9 bidders), liquid oxygen plant, Ellsworth Air Force Base, ENG-25-066-60-133, RAPID CITY, S. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 2 CD 5/4.

Henkel Constr. Co., 307 Boyce-Greely Bldg., Sioux Falls, S. D. LB **$342,130**, enlargement of sewage treatment facilities, SIOUX FALLS, S. D. City, City Hall, Sioux Falls, S. D. CD 4/29/58.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck,
N. D.—**Northern Improvement Co.**, 633 1st Ave., Fargo, N. C. and **Schultz & Lindsay Constr. Co.**, 320½ Broadway, Fargo, N. D., CA **$909,847**, c. conc. pavement 5.701 mi. Interstate 94 from near Casselton east, Proj. I 94 8 (36) West Part; CA **$1,203,196**, c. conc. pavement 5.807 mi. Interstate 94 east of Casselton, Proj. I 94-8(36) East Part, Cass Co.; CA **$732,191**, base, b. conc. surf 5.807 mi. Interstate 94 east of Casselton, Proj. I 94 8(36) East Part, Cass Co. Bids May 27. Grand total $2,845,-231. CD 6/1 under LB.

† **Line Material Industries, McGraw-Edison Co.**, 700 W. Michigan St., Milwaukee, Wis., LB **$118,155** Sched. 1, one 230 kv horn gap switch and twenty-four 230 kv disconnecting switches; Sched. 2, five 69 kv disconnecting switches, Fort Thompson Substation, Missouri River Basin Proj., Transmission Div., Spec. DS 5327, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids June 9. CD 5/4.

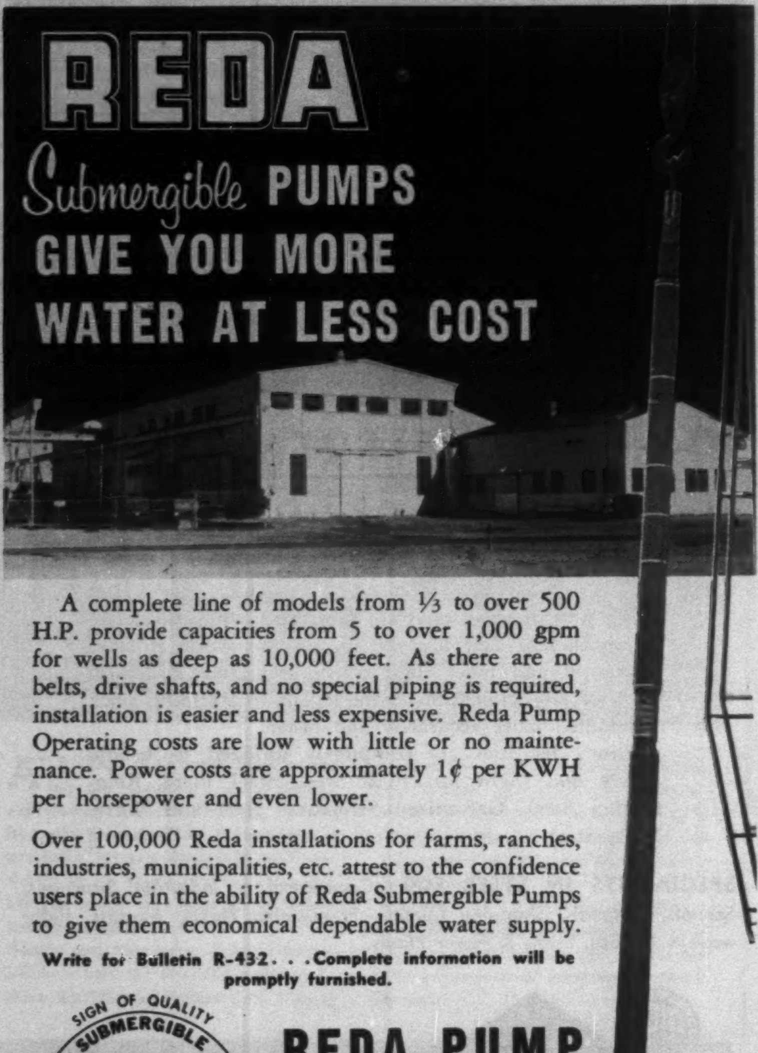
† **U. S. Eng.**, Box 61, Tulsa, Okla. rejected bids opened May 25, clearing, snagging Boggy Creek, Eng. 34-066-60-110, $44,493. OKLAHOMA. CD 5/4.

Palm Paving Co., 5938 NW 40th St., Oklahoma City, Okla. CA **$112,641** est. $118,900, concrete pavement, 16 residence streets WARR ACRES (P. O. Oklahoma City) OKLA. City, City Hall, Warr Acres, (P. O. Oklahoma City) Okla. Phillips & Stong, 283 Wilshire Ave., Oklahoma City, Okla., engrs. Awarded June 6.

† **Interstate Contractors**, P. O. Box 1341, Great Falls, Mont., CA **$538,522**, runway and taxiway extensions, Gore Field, Inv. 60-82, GREAT FALLS, MONT., U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., Bids May 17. CD 5/25.

▲ **Thompson Pipe & Steel Co.**, 3001 Larimer St., Denver, Colo., CA **$1,217,478**, material only, 28,000 ft. high pressure pipe, Conduit Nos. 28 and 29, DENVER, COLO. Bd. Water Comrs., 144 W. Colfax St., Denver, Colo. Bids June 1. Awarded June 7. CD 6/3 under LB;
Lock Joint Pipe Co., Cooper Bldg., Denver, Colo., CA **$734,313**, material only, approx. 14,000 ft. low pressure pipe (concrete) Conduit No. 29 (Denver, Colo.).

▲ **San Jacinto Equipment Co.**, 2311 10th St., Denver, Colo. CA **$1,587,819**, bit. pavement overlay, runway, Stapleton Air Field, FAA Proj. 9-05-010-22 DENVER, COLO. City and County of Denver, City and County Bldg., Denver, Colo. Bids May 10. Awarded June 7. CD 5/17 under LB.



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CIRCLE 244 ON READER SERVICE CARD

† **Westwood Constr. Co.**, Box 8155, Denver, Colo., LB $308,326, Nosecone Facilities, Lowry Air Force Base, Eng. 25-066-60-27 DENVER, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 9. CD 5/23.

L. H. Kilgore Constr. Co., 7991 W. 6th Ave., Denver, Colo. LB $296,129 est. $385,000 (6 bidders) grading, paving, curbs and gutters 9 mi. city streets, LAFAYETTE, COLO. Town, Town Hall, Lafayette, Colo. Bids June 7. CD 3/29.

Western Paving Constr. Co., 5105 Washington Ave., Denver, Colo., LB $230,148 (7 bidders) streets, avenues, curbs, gutters, Special Imprvt. Dist. No. 60-1 WESTMINSTER, COLO. City, City Hall, Westminster, Colo. James L. Larsh, 9751 Montview Blvd., Aurora, Colo., engr. Bids June 7.

Clay Co., Court House, Henrietta, Tex., Owner Builds, $124,142, road imprvs., drainage, HENRIETTA, TEX. CD 3/30.

Walter M. Mischer, 705 Holmes Rd., Houston, Tex., CA $102,270, sanitary-storm sewers, HOUSTON, TEX. Edward A. Kelly, Cotton Exchange Bldg., Houston, Tex.

Walter M. Mischer, 705 Holmes Rd., Houston, Tex., CA $55,000, water lines, HOUSTON, TEX. Edward A. Kelly, Cotton Exchange Bldg., Houston. Tex.

▲ **W. S. Bellows Constr. Corp.**, 716 N. Everton St., Houston, Tex., CA Total est. $32,000,000. superstructure, 44 story office, Travis and Milam Sts. and Bell and Leland Aves., 6 story parking garage, bounded by Milam, Leland, Louisiana Sts. and Peace Ave., HOUSTON, TEX. Humble Oil & Refining Co., 1216 Main St., Houston, Tex. Bids June 1. CD 4/25.

City, City Hall, Houston, Tex., Owner Builds, $100,000. street repairing, HOUSTON, TEX. CD 9/16/59.

R. F. Beeler, Contractor and **Golfcrest Lumber & Supply Co.**, 8111 Easthaven Blvd., Houston, Tex., Owner builds, $120,175, sanitary-storm sewers, HOUSTON, TEX. CD 6/6.

R. F. Beeler, Contractor and **Golfcrest Lumber & Supply Co.**, 8111 Easthaven Blvd., Houston, Tex., Owner builds, $91,500. asphalt-paved streets, curbs and gutters, HOUSTON, TEX.

City, City Hall, Houston, Tex. Owner builds, $110,000. misc. storm sewers, HOUSTON, TEX. CD 9/16/59.

City Parks and Recreation Dpt., City Hall, Houston, Tex., Owner Builds, $125,000. golf course, northeastern section; $95,000, park; $135,000, golf course, Memorial Park Area, HOUSTON, TEX. CD 9/16/59.

R. F. Beeler, Contractor and **Golfcrest Lumber & Supply Co.**, 8111 Easthaven Blvd., Houston, Tex., Owner builds, $62,175. water lines and appurtenances, HOUSTON, TEX.

Walter M. Mischer, 705 Holmes Rd., Houston, Tex., CA $103,332. asohalt-paved streets, curbs and gutters, HOUSTON, TEX. Edward A. Kelly, Cotton Exchange Bldg., Houston, Tex.

Irving Jacobson & Assocs., 2427 North Blvd., Houston, Tex., Owner builds, $410,000. 27 DWELLINGS, PASADENA, TEX. CD 3/28.

City, City Hall, San Antonio, Tex., Owner builds, $110,000, street imprvs., SAN ANTONIO, TEX. CD 10/29/57.

City, City Hall, San Antonio, Tex., Owner builds, $100,000, sanitary sewers, SAN ANTONIO, TEX. CD 10/29/57.

Bexar Co. Comrs. Court, Court House, San Antonio, Tex. Owner builds, $90,000. 3 mi. Nacogdoches Rd., rehabilitation, drainage, SAN ANTONIO, TEX. CD 1/23/59.

E. C. Hall Co., 422 Hays St., San Antonio, Tex., LB $117,189 (7 bidders) Job 250, 6- to 36-in. water mains, SAN ANTONIO, TEX. City Water Bd., 506 Dolorosa St., San Antonio, Tex. Bids May 23. CD 5/12.

J. H. Chastain, Snyder, Tex., LB $92,311 (3 bidders) permanent type paving 33 city blocks, STAMFORD, TEX. City, City Hall, Stamford, Tex. Bids June 3.

United Constr. Co., 4311 Brookview St., Dallas, Tex., CA $799,838, Base Bid, Contr. 29, water treatment plant, WACO, TEX. City, City Hall, Waco, Tex. Bids June 1. CD 6/8, under LB.

† **Bureau Reclamation**, Dpt. Interior, Hungry Horse, Mont., cancelled bids to have been opened June 14, installing acoustical treatment for turbine gallery at Hungry Horse powerplant, Hungry Horse Proj., Spec. DC 5329, MONTANA. CD 6/2.

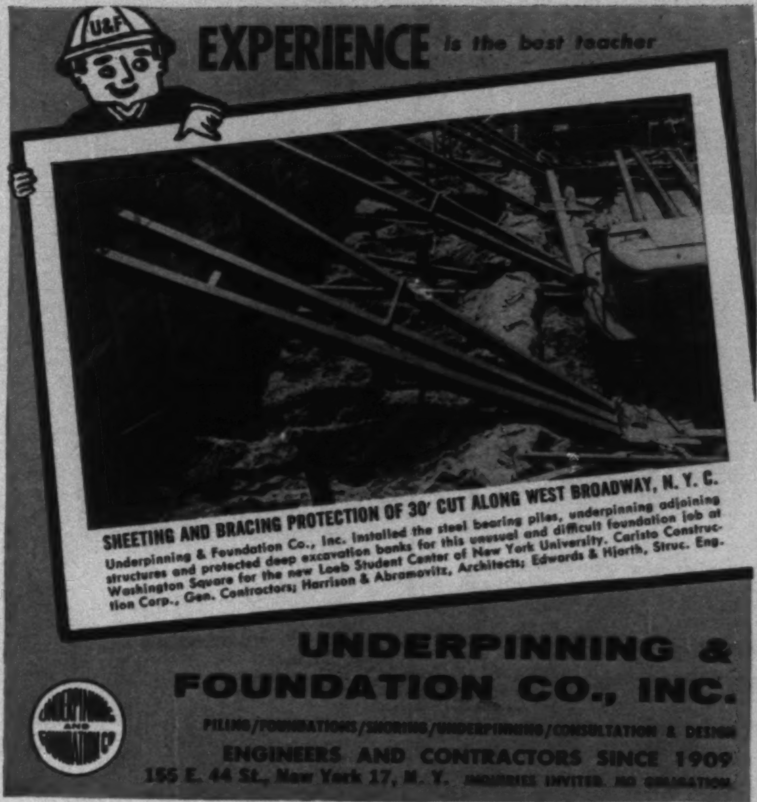
WYOMING—State Hy. Dpt., Cheyenne, Bids opened 6/14, **Lamb Constr. Co.**, Lusk, Wyo., LB $153,576 (3 bidders) 20 ft. and 22 ft. rigid frame bridges, on 0.5 mi. west and one 2.5 mi. west on Clark Connection from south of Wyoming-Montana State Line on Cody-Clark's Fork Rd., Fed. Aid Sec. Proj. No. S-1502 (5), Park Co. CD 6/3.

WYOMING—State Hy. Dpt., Cheyenne, Bids opened 6/14,

Wyo.—**Wilber Christensen**, P.O. Box 490, Rapid City, S. D., LB $208,949 (10 bidders), grading and misc. work 3.295 mi. on 4-lane divided interstate hy. between Laramie and Cheyenne, Fed. Aid Interstate Proj. No. I-80-6(11)364, Sect. I, Laramie Co.;

Wyo.—**L. H. Weber**, Rawlins, Wio., LB $123,851 (4 bidders), grading and misc. work on Filmore-Albany Rd. from Albany N.E., Fed. Aid Sec. Proj. No. S-0102(3), Albany Co.;

Wyo.—**Taggert Constr. Co.**, Cody, Wyo., LB $202,106 (1 bidder), grading, crushed base, plant mixed surf., cover aggr. seal, concrete median, 158 ft., 3 simple composite wide flange girder span bridge over 15 Mile Creek and misc. work 0.605 mi. Thermopolis-Worland Rd., Fed. Aid Primary Proj. No. F-034-4(4), Washakie Co.;



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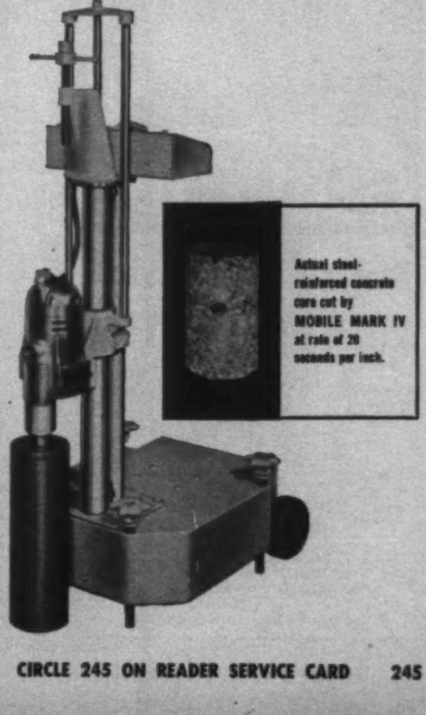

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Wyo.—Lamb Constr. Co., Lusk, Wyo., LB **$235,538** (5 bidders), grading, draining, sub-base, base inverted penetration surf. treatment, 2 twin structural plate pipes and misc. work 4.951 mi. Aladdin South Rd., Fed. Aid Sec. Proj. No. S-0603(2), Crook Co.;
Wyo.—Schmidt Constr. Co., Arvada, Colo., LB **$137,713** (2 bidders), road Proj. FASP-R-AD-7(1), Laramie Co.;
Wyo.—Boatwright & Smith, Casper, Wyo., LB **$205,125** (4 bidders), road Proj. SP-SC-CFM2-1;
Wyo.—Millinex Engineering Co., Sheridan, Wyo., LB **$144,214** (2 bidders), road Proj. SSMP-4994 and PE-10 combined, Natrona, Johnson and Campbell Counties. CD 6/3.

Kenneth Wallace Constr. Co., Wauneta, Neb., LB **$302,204**, est. $346,000 (4 bidders), paving, curb and gutter, city streets, WRAY, COLO. Town, Town Hall, Wray, Colo. Henningson, Durham & Richardson, Inc., 121 E. Vermijo Ave., Colorado Springs, Colo., engrs. CD 4/15.

† **Cementation Co. of America, Inc.**, 1310 King St., Wilmington, Del., CA **$765,201**, (9 bidders), approx. 1,216 ft. excavation vertical shaft with an overall diameter of 12 ft. 8 in. and approx. 1,146 ft., 8 x 12 ft. horizontal tunnel for Project Gnome, near Carlsbad, NEW MEXICO. Atomic Energy Comn., Project Gnome Office, 1030 Canal St., Carlsbad, N. M. Bids May 10. CD 5/20, under LB.

BUILDINGS—LB & CA

Watson Constr. Co., 1409 Willow St., Minneapolis, Minn., LB **$484,000** (12 bidders), 106 x 162 ft. COURT HOUSE addn., ANOKA, MINN. Anoka Co., Court House, Anoka, Minn. Bids June 9. CD 6/6.

Robin Hood Constr. Co., 1143 Dupont Ave. N., Minneapolis, Minn., Owner Builds, **$300,000**, 1 story, 200 x 200 ft. PRINT SHOP and WAREHOUSE, 2340 St. Croix St., ROSEVILLE (P.O. ST. PAUL), MINN. B. Mayerson, 1216 Nicollet Ave., Minneapolis, Minn., engr.

▲ **A. Hedenberg & Co., Inc.**, 4621 East Superior St., Duluth, Minn., CA **$1,051,000**, (4 bidders), ELEMENTARY SCHOOL, Silver Bay and HIGH SCHOOL addn., TWO HARBORS, MINN. Bd. Educ., Two Harbors, Minn. Bids June 7. CD 5/18.

F. A. Gangl Constr. Co., 357 Webster St., St. Paul, Minn., CA **$228,490**, 1 story, 70 x 442 ft. GARAGE, County Rd. C and Snelling Ave., ROSEVILLE (P.O. ST. PAUL), MINN. Interstate Properties, Inc., 820 Hampden Ave., St. Paul, Minn. Bids May 23. CD 5/19.

Trans-American Constructors, Inc., P.O. Box 268, Pittsburgh, Kan., CA **$122,100**, outdoor electric SUBSTATION, 69 KW terminal structure, 2 power transformers and metal-clad switchgear for municipal power sys., FOREST CITY, IOWA. City, City Hall, Forest City, Iowa. Bids May 19. Stanley Engineering Co., Hershey Bldg., Muscatine, Iowa, engr.

Johnson Constr. Co., Gowrie, Iowa, CA **$202,451**, 1 story, 240 x 240 ft. MFG. PLANT, JEFFERSON, IOWA. Franklin Mfg. Co., 65 22 Ave. N.E., Minneapolis, Minn. Bids May 24.

Rolf Constr. Co., Luverne, Minn., CA Est. **$200,000**, 25 x 40 ft. and 60 ft. high FEED MILL, 1 story, 15,000 sq. ft. warehouse, and 1 story, 1,000 sq. ft. office, LE MARS, IOWA. International Milling Co., Superwest Feeds Div., Investors Bldg., Minneapolis, Minn. Bids Apr. 1.

Davey & Moen, Brick & Tile Bldg., Mason City, Iowa, CA **$697,000**, 1 story, 36,000 sq. ft. classroom, 1 story, 27,000 sq. ft. gymnasium, cafeteria, etc. Hy. 106, MASON CITY, IOWA. Central Catholic High School, c/o Rev. William F. Powers, Supt. St. Joseph's Mercy Hospital, Mason City, Iowa. Bids Apr. 21. CD 5/20, under LB.

▲ **W. A. Klinger, Inc.**, 2015 7 St., Sioux City, Iowa, CA est. **$1,000,000**, SHOPPING CENTER, motel, Hy. 75 S. and Glenn Ave., SIOUX CITY, IOWA. Sunset Plaza, Inc., 232 Davidson Bldg., Des Moines, Iowa.

Irvinbilt Co., Box 689, Chillicothe, Mo., CA Est. **$160,000**, 18,000 sq. ft., 90 x 200 ft. PLANT expansion, CHILLICOTHE, MO. Chillicothe Industrial Development Corp., 718 Cherry St., Chillicothe, Mo. David Griswold & Assoc., 1409 Willow, Minneapolis 3, Minn., archts. Donaldson Co., Inc., St. Paul, Minn., lessee. Awarded May 31.

Don C. Musick Constr. Co., 4900 Washington Blvd., St. Louis 8, Mo., CA Est. **$400,000**, remodeling CHURCH of St. Louis of France, 3rd and Walnut Sts., ST. LOUIS, MO. St. Louis Archdiocesan Bldg. Comn., 4396 Lindell Blvd., St. Louis 8, Mo. Murphy & Mackey, 6124 Enright Ave., St. Louis 12, Mo., archts. CD 3/4/59.

† **Smith-Cooke Constr. Co.**, 4829 Easton Ave., St. Louis, Mo., LB **$123,962**, (4 bidders), RESEARCH LABORATORY addns., alterations, Bldg. 6, Veterans Admin. Hospital, ST. LOUIS, MO. Veterans Administration, Munitions Bldg., Wash., D. C. Bids June 6. CD 4/18.

S. Patti Constr. Co., 1304 Admiral Blvd., Kansas City, Mo., CA **$273,000** substructure, ELECTRIC GENERATING UNIT, SIBLEY, MO. Missouri P. Service Co., 10700 E. 50 Hy., Raytown, Mo. Awarded June 2. Grand total $958,000.
J. F. White Engineering Co., Englewood, Colo., CA **$522,000** install high pressure, high te[illegible]. piping, turbine, condensers, boiler feed pump Electric Generating Unit (Sibley, Mo.).
Evans Electrical Constr. Co., 1621 Locust, Kansas City, Mo., CA **$163,000** electric wiring and electric sys. for control panel, Electric Generating Unit (Sibley, Mo.).

▲ **M. W. Watson, Inc.**, First National Bank of Topeka Bldg., Topeka, Kan., CA **$1,444,000**, HOSPITAL, INDEPENDENCE, KAN. Mercy Hospital, 861 W. Myrtle St., Independence, Kan. Bids May 17. CD 4/26.

† **Geo. L. Cousins Contg. Co.**, 875 N. Skinker Blvd., St. Louis 30, Mo., LB **$763,780**, est. $500,000-$1,000,000, Naval and Marine Corps RESERVE TRAINING CENTER, former Naval Air Station, Lambert-St. Louis Municipal Airport, Spec. No. 22433/60, ST. LOUIS, MO.

U. S. Eng., 616 S. Boston Ave., Tulsa, Okla., rejected bids opened May 5, one-bay MAINTENANCE SHOP, Army Reserve Center, $50,000, ADA, OKLA. CD 3/30.

▲ **Walsh & Burney Co.**, 928 N. Flores St., San Antonio, Tex., CA **$4,025,877**, Southwest Texas METHODIST HOSPITAL, SAN ANTONIO, TEX. Southwest Texas Methodist Hospital Bd. Trustees, 535 Bandera Rd., San Antonio, Tex. Bids May 24. CD 5/27, under LB.

▲ **Lowe Constr. Co.**, 2325 9 Ave. N., Billings, Mont., CA **$1,284,800**, 6 story WOMEN'S DORMITORY and student services, Eastern Montana College of Education, BILLINGS, MONT. State Bd. Regents, Helena, Mont. Bids June 8, awarded June 8. CD 5/16.

† **Roth Constr. Co.**, Luverne, Minn., LB **$735,000** (6 bidders) Base Bid, ENTOMOLOGY RESEARCH LABORATORY for Department of Agriculture. Proj. No. 39029, BROOKINGS, S. D. General Services Admin., Public Bldgs. Service, 2206 East Bannister Rd., Kansas City 10, Mo. Hugill, Blatherwick, Fritzel & Kroeger, 366 Boyce-Greeley Bldg., Sioux Falls, S. D., archts. Bids June 7. CD 5/10.

▲ **Houston Chemical Corp.**, (sub. Chatham Chemical Corp., of New York), 114 E. 40 St., New York, N. Y. Owner builds, **$7,500,000**. ethyleneglycol chemical PLANT near here, BEAUMONT, TEX. CD 3/14.

E. W. Johnson, 1441 S. Mosley St., Wichita, Kan., LB **$563,260** (3 bidders), HIGH SCHOOL, MEDICINE LODGE, KAN. Rural High School Dist. No. 7, Medicine Lodge, Kan. Bids May 26. CD 5/11.

McLean Constr. Co., 1846 E. Sunshine St., Springfield, Mo., CA Est. over **$600,000**, MEDICAL CENTER, 222 Hillside and Central Sts., WICHITA, KAN. College Hill Medical Tower, 323 W. Murdoch St., Wichita, Kan. CD 5/25/55.

Alston Constr. Co., 900 East Broadway, Sweetwater, Tex., LB **$419,800** (5 bidders), 25 brick veneer duplex HOUSING, COLORADO CITY, TEX. Colorado City Housing Auth., P.O. Box 1187, Colorado City, Colo. Bids June 3. CD 10/15/58.

▲ **Paul J. McConnell, Builder**, 2044 Colquitt St., Houston, Tex., Owner Builds, **$456,500**, 23 DWELLINGS; **$410,000**, 14 brick dwellings; **$442,150**, 21 dwellings, Walnut Bend Subdivision, HOUSTON, TEX. Grand total, $1,308,650. CD 3/22.

Lakewood Building Co., 4034 Grapeview Rd., Houston, Tex., Owner Builds, **$444,900**, 32 DWELLINGS; **$412,000**. 25 dwellings, Woodforest Subdivision, HOUSTON, TEX. CD 3/25.

▲ **J. M. Odom, Contractor**, P.O. Box 774, Austin, Tex., CA **$1,258,000**, LIBRARY, LUBBOCK, TEX. Texas Technological College, Lubbock, Tex. Bids May 27. CD 5/10.

Melton Constr. Co., 2930 Commerce St., Dallas, Tex., Owner Builds, **$400,000**, APARTMENT, MESQUITE, TEX. CD 6/2.

Lloyd A. Denton, Contractor, 8506 Sagebrush St., San Antonio, Tex., Owner Builds, **$419,600**, 41 DWELLINGS, SAN ANTONIO, TEX. CD 6/6.

▲ **Fitze-Kitchens Constr. Co.**, P.O. Box 3358, Austin, Tex., CA **$1,213,103**, 115,000 sq. ft. masonry senior high SCHOOL, southwestern section, WICHITA FALLS, TEX. Wichita Falls Independent School Dist., Wichita Falls, Tex. Bids May 12. CD 4/25.

American Constr. Co., 1820 E. 16th Ave., Denver, Colo. CA **$300,000**, 1 and 2 story, 62,000 sq. ft. brick WAREHOUSE AND OFFICE, DENVER, COLO. Cullen-Thompson Motor Co., 2320 W. 4th Ave., Denver, Colo. Richard B. Williams, 810 12th St., Denver, Colo., archt.

Hensel Phelps Constr. Co., Box 604, Greeley, Colo. CA $909,000, nineteen 1 and 2 story Married STUDENT HOUSING, Colorado State University, FORT COLLINS, COLO. State Planning Div., State Capitol Bldg., Denver, Colo. CD 6/3, under LB.

Lembke Constr. Co., P.O. Box 771, Colorado Springs, Colo., CA **$478,789**, 1 and 2 story, 28,000 sq. ft. JUNIOR HIGH SCHOOL, RANGELY, COLO. School Dist. No. 4, Rangely, Colo. Bids Apr. 28. Awarded May 19. CD 3/25.

† **Standard Constr. Co.**, P.O. Box 3246, El Paso, Tex., CA **$139,495**, telephone cable PLANT, White Sands Missile Range, ORD 29-040-60-218, LAS CRUCES, N. M. Purchasing & Contracting Div., White Sands Missile Range, N. M. Bids May 12. CD 4/22.

FAR WEST

† **Utah—BA 6/30**—Bureau Reclamation, Dpt. Interior, Ogden, drilling and casing Riverdale and Clearfield Wells, Weber Basin Proj. Spec. 400C-144. CD 9/16/57.

ARIZONA—BA 6/29—State Hy. Dpt., 206 S. 17 Ave., Phoenix,
Pinal Co.—installing fluorescent lighting sys. and dist. panels Phoenix-Globe Hy., Rtes. 60-70 at Queen Creek Tunnel east of Superior. Plans deposit $4.25. Wm. E. Willey, c/o owner, st. engr.

† **Oregon—BA 6/29**—Bureau P. Rds., Morgan Bldg., Portland,
Josephine Co.—grading 9.032 mi. Deer Creek Rd.

† **Washington**—BA 6/29—U. S. Forest Service, 729 N.E. Oregon St., Portland, Ore., Barr Creek Bridge on Wells Creek Rd., Mount Baker National Forest.

† **WASHINGTON** — BA 6/29 — Bureau P. Roads, Dpt. Commerce, Morgan Bldg., Portland, Ore.,
King Co.—grading and surf. 7 mi. Money Creek Rd., Proj. 2601-A1.

NEVADA—BA 6/30—State Hy. Dpt., Carson City,
Humboldt Co.—reconstr., realignment and wid'n. to 12 ft. travel lanes of 14 mi. of US 95, Orovada. $950,000. Plans deposit $50.

NEVADA—BA 6/30—Directors State Dpt. Hys., State Hy. Bldg., Carson City,
Humboldt Co.—constr. approx. 14,083 mi. US Hy. 95 between jct. with St. Rte. 8A and 2 mi. north of Orovada.

OREGON—BA 6/30—State Hy. Comn., Hy. Bldg., Salem,
Coos Co.—732 ft. RCDG bridge, Oregon Coast Hy.
Jackson Co.—Rogue River and Paul B. Rynning bridges.
Lane Co.—563 ft. RCDG bridge over Coast Fork of Willamette River, Pacific Hy., Proj. FAIHP I 5-3 (14)181.
620 ft. bridge and two overflow structures, Peripheral Rd. Proj. FAP S 441(1).
Lincoln Co.—Siletz Bay Bridge drawrest replacement.
Linn Co.—130 ft. RCDG bridge, Bryant Park.
Polk Co.—140 ft. RCDG bridge, Richreal Creek, 182 ft. RCDG bridge, Luckiamute River, Proj. FAP S-149(5).

Sherman Co.—110 ft. bridge, Moro-Lone Rock Rd., Proj. FAP S 457(1).

Washington Co.—bridge, grading, paving Schools Rd. Plans deposit $2.

OREGON—OFFICE—BA 6/30—State Hy. Comn., Hy. Bldg Salem, 48 x 120 ft. office. Plans deposit $2.

OREGON—BA 6/30—State Hy. Dpt., Hy. Bldg., Salem.
Baker Co.—grading, surf. 3.26 mi. Long Fir Rd. Proj. FAP S 445(1).
leveling, course oiling .99 mi. Pocohontas Rd., Proj. FAP S 128(3).
Benton Co.—traffic signals.
Clackamas, Wasco and Hood River Counties—rock production on two highways.
Clatsop Co.—paving, shoulder oiling 7.02 mi. Sunset Hy.
Dechutes Co.—paving project, Pava Butte, The Dalles-California Hy.
Douglas Co.—grading 5.36 mi. North Umpqua Rd. CD 5/6 reline 80 lin. ft. Elk Creek Tunnel, constr. portals, Umpqua Hy. CD 5/6.
Gilliam Co.—Rock Creek, Eight Mile Canyon bridges, Proj. FAP S 439(1) and S 163(3).
Josephine Co.—paving 7.6 mi. Redwood Hy.
Lane Co.—grading, three RCDG bridges, Goshen-Coast Fork Willlamette River section Pacific Hy. Proj. FAIHP I 5 3 (14) 181.
Lincoln Co.—grading, oiling. 28 mi.
Linn Co.—paving 1.27 mi. Cox Creek Rd. Proj. FAP S 160(3).
paving 2.95 mi. Crabtree-Lebanon Rd., Proj. FAP S 164(3) paving 1.71 mi. Diamond Hill Rd., Proj. FAP S 448(1).
Multnomah Co.—paving 2.37 mi. 136th Ave. to 181st Ave. on NE Glisan St., Proj. FAP S 297(4).
grading, detour bridges 1.18 mi. Page St.-Main St. unit East Bank Freeway, Pacific Hy., FAIHP I-5-6(16) 301.
Umatilla Co.—stone leveling course, paving. 29 mi.
Wallowa Co.—leveling course, oiling, Fish Hatchery, and Werst Corner-Wallowa Rds., Proj. FAP S 173(3) and S 203(3).
Washington Co.—grading, paving, 210 ft. RCDG bridge, 3.3 mi. Tualatin Valley Hy. Proj. FAP F 183(13).
signing, illumination Sunset Hy., Proj. FAP F 318(6) and U 318(4). Plans deposit $2. each.

▲ **CALIFORNIA**—BA 7/13—State Div. Hys., 1120 N St., Sacramento.
Humboldt Co.—3.7 mi. four lane freeway US 101 between 0.2 mi. south of Loleta Dr. and 0.7 mi. south of Fields Landing, incl. two interchanges, I-HUM-1-G. $2,590,000. CD 10/27/58.

† **Washington**—BA 7/14—Bureau Reclamation, Dpt. Interior, Casper, 115-kv addns. to Sidney substation, Missouri River Basin Proj., Transmission division, DC-5352. CD 5/25/44.

† **Ore., Mt. Hebo**—GROUND/AIR TRANSMITTER RECEIVER—BA 7/19—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., 26 x 79 ft. ground/air rein.-conc. transmitter receiver bldg. 2 mi. paved access road, utilities, Mt. Hebo Air Force Station, Eng. 45-108-60-147, $300,000. Plans deposit $1.90.

† **CALIFORNIA**—BA 7/20—State Div. Hys., 1120 N St., Sacramento.
Alameda Co.—1.1 mi. eight lane freeway on MacArthur Freeway US Hy. 50 between San Pablo Ave. and Broadway in Oakland incl. nine traffic separation and ramp structures. IV-ALA-5-OAK. $5,000,000. CD 10/27/58.

WASHINGTON—BA 7/6—State Hy. Comn., Dpt. Hys., Olympia,
Grant and Kittitas Counties—placing riprap and constr. rein.-conc. bridge piers on Primary St. Hy. No. 7, Columbia River Bridge at Vantage, FAP No. I-90-3 (8) 133. CD 10/3/58.
Grays Harbor Co.—grading, surf. and constr. treated timber trestle overpass on 0.199 mi. Rayonier Overpass, FAP No. S-1345 (2).

WASHINGTON—BA 7/6—State Hy. Comm., Dpt. Hys., Olympia,
Chelan Co.—draining, grading, surf., constr. bit. surf. treatment and paving with b. conc. 2.372 mi. Primary St. Hy. No. 15, Chiwaukum Creek to Winton, FAP No. F-024-2 (2). CD 1/16/59.

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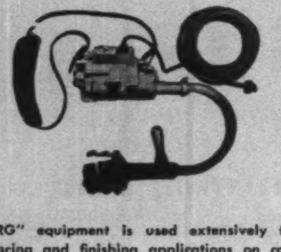

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King Co.—signing on Primary St. Hy. No. 1, Factoria Interchange. CD 1/16/59.

Pacific Co.—clearing, draining, grading and placing riprap 1.63 mi. Sec. State Hy. No. 12-B, Knappton vicinity, FAP No. F-003-1 (11). CD 1/28/59.

Snohomish Co.—draining, grading, surf. and paving with b. conc. 10.721 mi. State Hys. Nos. 15 and 2-J, Snohomish vicinity and King County Line to Jct. PSH No. 1. CD 1/16/59.

Spokane Co.—draining, grading, surf. and paving with b. conc. 1.631 mi. Sec. State Hy. No. 2-H, Crestline St. to Cuba St., Spokane, FAP No. US-0284 (3). CD 1/29/59.

draining, grading, surf., constr. bit. surf. treatment paving with b. conc., signing and fencing 2.191 mi. Sec. State Hy No. 3-H, 32 Ave. to Sprague Ave., FAP Nos. S-0285 (5) and US-0285 (6). CD 1/29/59.

Wahkiakum Co.—clearing, draining, grading, surf., constr. bit. surf. treatment, cement treated base and b. conc. pavement 1.572 mi. Primary State Hy. No. 12, Cathlamet to Abe Creek, FAP No. F-004-2 (17). CD 1/28/59.

† **Calif., Sacramento**—NAVIGATIONAL AID TVOR—BA 7/12—U.S. Eng., 1209 8th St., navigational aid TVOR, McClellan Air Force Base. Spec. 2574. ENG-04-167-60-19. Plans deposit $1. CD 9/6/58.

BUILDINGS—BA

▲ **Calif., Van Nuys**—HOSPITAL ADDN.—BA 6/30—Valley Presbyterian Hospital, 15107 Van Owen St., 4 story rein.-con. hospital addn. $1,400,000. CD 3/12/59.

▲ **Calif., Compton**—SCHOOL—BA 7/1—Compton Union High School Dist., 417 West Alondra Blvd., Vanguard Junior high school addns. (formerly San Pedro Junior High). $1,250,000. CD 1/2/58.

▲ **Wash., Seattle**—MOTEL—BA 7/6—Skidmore, Owings & Merrill, archt., 2040 S. W. Jefferson St., Portland, Ore., five 2 story frame and masonry motel at Seattle-Tacoma Airport, for Hilton Hotels, Inc., 277 Park Ave., New York 17, N. Y., $2,000,000. CD 11/6

▲ **Calif., Dunsmuir**—HOTEL—BA 7/7—Royal Hotels, Inc., 821 Market St., San Francisco, Calif., 1st stage, frame, masonry, stone Shasta Royal Inn. $1,000,000. Plans deposit $50. Kal H. Porter, 3850 Middlefield Rd., Palo Alto, Calif., archt. CD 11/17/59.

▲ **Calif., Los Angeles**—CHILDREN'S CLINIC—BA 7/19—University of California at Los Angeles, 405 Hilgard Ave., 4 story rein.-con. Marion Davies children's clinic. $1,500,000. Welton Becket & Assoc., 5657 Wilshire Blvd., Los Angeles, Calif., archts. CD 8/9/55.

▲† **Calif., Fort Ord**—HOUSING—BA About 7/21—U.S. Eng., Montgomery St., San Francisco, 500 units Capehart Housing, Title VIII, Fort Ord. ENG-04-203-60-58. Extended date. **$8,000,000.** Plans deposit $10. CD 6/8.

Nev., Lovelock — HOSPITAL — BA 7/20 — Bd. Comrs., Pershing Co., 1 story, 50-bed masonry hospital, $800,000. Plans deposit $50. Fetzer & Fetzer, 1345 S. Main St., Salt Lake City 15, Utah, archts. CD 5/11.

▲ **Calif., Santa Ana**—HOSPITAL—BA 8/3—Bd. Suprvs. Orange Co., Court House, 5 story General Hospital. $5,000,000. CD 2/18/59.

HEAVY CONSTRUCTION—LB & CA

ALASKA—State Dpt. P. Wks., Div. of Hys., Juneau, Bids opened 6/7,

Alcan Pacific Co., 1445 E. 8th Ave., Anchorage, Alaska, LB **$658,807**, est. $873,200, (10 bidders), grading, draining 13.8 mi. Nome-Teller Hy. and constr. timber bridge on steel pilings over Cripple River, Proj. S-0131(2). CD 5/20.

† **S. S. Mullen, Inc.**, Box 3885, Terminal Annex, Seattle, Wash., LB **$306,407**, repair roads, surf. drainage sys., King Salmon Air Force Station, near Naknek, IFB 65-601-60-228, KING SALMON, ALASKA. Base Procurement Office, Elmendorf Air Force Base, Alaska. Bids June 7. CD 9/28/59.

Wesco-Stoen Co., 29 Chris Rd., Anchorage, Alaska, CA **$359,716** (3 bidders) lift station and 13,790 ft. 8 in. wood stave sewer lines, area east of Noble St., FAIRBANKS, ALASKA. City, City Hall, Fairbanks, Alaska. Bids June 6. CD 5/16.

UTAH—State Rd. Comn., State Capitol, Salt Lake City, Bids opened 6/7,

W. W. & W. B. Gardiner, Inc., 24 S. West Temple, Salt Lake City 1, Utah, LB **$96,811**, (3 bidders), resurf. 21st South from State St. to 11th, Salt Lake City, Proj. 1693, Salt Lake Co. CD 12/17/58.

† **Theo. Wood Constr. Co.**, 280 W. Haven Ave., Salt Lake City, Utah, LB **$459,910**, est. $475,254, (7 bidders), earthwork, pipe lines and structures, three ecualizing reservoirs for North Davis Laterals, Weber Basin, Ogden, Davis Co., Spec. DC 5321, UTAH. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids June 7. CD 4/29.

▲† **Chaney & Jones Constr. Co.** (sub. Technical Constructors, Inc.), 12820 Colt Rd., Dallas, Tex., CA **$1,576.000**, air traffic control bldg., Municipal Airport, SALT LAKE CITY, UTAH. Federal Aviation Agency, 5651 W. Manchester Ave., Los Angeles, Calif. Bids May 31. CD 6/7, under LB.

† **ARIZONA**—Bureau P. Rds., 106 N. 5 St., Phoenix, Bids opened 5/3,

Isbell Constr. Co., P.O. Box 1710, Phoenix, Ariz., LB **$230,574** (2 bidders), grade, drain, base course bit. surf. 5.7 mi. U.S. 66 along Painted Desert Rim Dr., in Petrified Forest National Monument Proj.

† **N. P. Van Valkenberg**, 1627 N. Chico Ave., El Monte, Calif., CA **$129,665** (3 bidders), storm drain facilities for G and H Sts. at Luke Air Force Base, Litchfield Park, ENG-04-353-60-91, PHOENIX, ARIZ. Bids May 28, awarded May 27. **(Correction**—contractor's address.) CD 6/9, under CA.

† **M. M. Sundt Constr. Co.**, 440 S. Park Ave., Tucson, Ariz., LB **$159,890**, (2 bidders), airfield hardstand, Electronic Proving Ground, ENG-04-353-60-94, FORT HUACHUCA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 8. CD 5/16.

WASHINGTON—State Hy. Comn., Transportation Bldg., Olympia, Bids opened 6/7,

Wash.—**Woodworth & Co., Inc.**, 1200 E. D St., Tacoma, Wash., LB **$212,269**, (4 bidders), rein.-con. box girder bridge for Thompson Ave. undercrossing in Tacoma, draining, grading, surf. and b. conc. paving 0.016 mi. Primary St. Hy. 1, FAP No. I-5-3(89)133, Pierce Co.

Wash.—**R. C. Marvel Constr. Co., Inc.**, P.O. Box 73, Goldendale, Wash., LB **$122,094**, (2 bidders), rein.-con. slab bridge over Swale Creek, draining, grading, surf. and b. conc. paving 0.597 mi. Primary St. Hy. 8, FAP No. F-014-2(3), Klickitat Co.

Wash.—**Lockyear & White, Inc.**, 1801 Hudson St., Longview, Wash., LB **$88,589**, (9 bidders), rein.-con. box girder bridge 0.072 mi. Devereese Rd., FAS No. S-0623(2), Lewis Co. CD 5/18.

WASHINGTON—State Hy. Comn., Transportation Bldg., Olympia, Bids opened 6/7,

Wash.—**Fiorito Bros.**, 1100 Leary Way, Seattle, Wash., LB **$247,065**, (8 bidders), draining, grading, surf., b. conc. paving, fencing and prestressed rein.-con. girder bridge on 1.188 mi. Sec. St. Hy. 1-A, Hunter Rd. extension to Division St., Arlington, FAS No. S-0202(15), Snohomish Co.

Wash.—**Harrison Bros. Co.**, 225 Wakefield Dr., Tacoma, Wash., LB **$117,564**, (5 bidders), draining, grading, surf., constr. bit. surf. treatment and b. conc. paving 2.614 mi. Military Rd., FAS No. S-0387(2), King Co. CD 5/18.

† **Power Line Erectors**, N. 2018 Waterworks Ave., Spokane, Wash., LB **$104,395**, (8 bidders), relocate Grand Coulee-Snohomish 230-kv lines Nos. 1 and 2, and Chief Joseph-Snohomish 345-kv lines Nos. 3 and 4, Douglas and Chelan Counties, Inv. 9096, WASHINGTON. Bonneville Power Admin., 1001 N.E. Lloyd Blvd., Portland, Ore. Bids June 7. CD 5/18.

† **Willamette Tug & Barge Co.**, foot of N. Portsmouth Ave., Portland, Ore., LB **$106,575**, est. $116,730, (6 bidders), dredging Swinomish Channel, Skagit Co., Inv. 60-31, WASHINGTON. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 7. CD 5/25.

† **WASHINGTON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore., Bids opened 6/9,

S. S. & C., Inc., 4502 51 S.W., Seattle, Wash., LB **$309,671**, (6 bidders), 390 ft. rein.-con. bridge over Quinault River, grading and bit. paving 0.4 mi. on Quinault Hy., Proj. 3-A2, Grays Harbor Co. CD 5/26.

† **Chas. T. Parker**, P.O. Box 7588, Portland, Ore., LB **$888,993** (5 bidders), Schedule V, 21.4 mi. Rocky Reach-Maple Valley 345-kv line No. 1, Kittitas and King Counties, Inv. 9124, WASHINGTON. Bonneville Power Admin., 1001 N.E. Lloyd Blvd., Portland, Ore. Bids May 27. CD 5/11.

WASHINGTON—State Hy. Comm., Dpt. Hys., Olympia, Bids opened 6/1,

Wash.—**Scarsella Bros.**, 2207 S. 146 St., Seattle, Wash., LB **$469,243** (6 bidders), clearing, draining, grading, fencing and rein.-con. slab bridge on 4.156 mi. Primary St. Hy. 2, from jct. with Primary St. Hy. 5 to Hobart Rd., FAP No. EBF-046-1 (14), King Co.

Wash.—**N. A. Degerstrom, Inc.**, E. 15 32 St., Spokane, Wash., LB **$309,506** (8 bidders), draining, grading, surf., con tr. bit. surf. treatment and fencing 3.92 mi. Primary St. Hy. 3, Kuhl Ridge Rd. to Meadow Creek summit, Garfield Co.

Wash.—**LaVelle Constr. Co.**, 1115 N. I St., Tacoma, Wash., LB **$100,930** (4 bidders), demolition and fencing on 0.953 mi. Primary St. Hy. 1, Seattle freeway, Olive Way to E. Prospect St., King Co. CD 5/12.

▲† **Baugh Constr. Co.**, 922 Poplar Place, Seattle, Wash., LB **$1,468,490**, bldgs. for air-traffic control center, Inv. 4-60-1060, AUBURN, WASH. Federal Aviation Agency, 5651 W. Manchester St., Los Angeles, Calif. Bids June 8. CD 5/27.

▲ **Northwest Constr. Co.**, 3950 6 Ave. N.W., Seattle, Wash., CA **$2,110,909**, est. $2,000,000, paving W. Roxbury and other streets, SEATTLE, WASH. City, County-City Bldg., Seattle 4, Wash. Bids June 1. Awarded June 8. CD 6/6 under LB.

† **Oregon**—Bureau P. Rds., Morgan Bldg., Portland, Bids opened 6/2,

S. W. Groesbeck, Box 646, Eugene, Ore., LB **$442,476**, (3 bidders) grading 27.418 mi. timber access roads, Klamath and Jackson Counties. CD 5/18.

† **Oregon**—Bureau P. Rds., Morgan Bldg., Portland, Bids opened 6/3,

Beckley & Thomas Rock Products, 1494 NE Stephens St., Roseburg, Ore. LB **$352,938**, est. $393,284 (4 bidders) surf. 9.467 mi. Burnt Mt. and North Fork Middle Creek Rds. Coos Co. CD 5/18.

M. Malaspina & Co., 1901 23 Ave. S., Seattle, Wash., LB **$63,140**, 8,800 ft., 8 and 10 in. asbestos cement water dist. mains, BOTHELL, WASH. City, City Hall, Bothell, Wash. Gray & Osborne, 1844 Westlake Ave. N., Seattle, Wash., engrs.

Manson Constr. & Engineering Co., 5209 E. Marginal Way, Seattle 4, Wash., CA **$65,000**, (3 bidders), structural steel piling north breakwater at Shilshole Bay marina, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. Bids June 7. CD 6/1.

Valley Constr. Co., 7708 Rainier Ave., Seattle, Wash., and **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, CA **$938,033**, (4 bidders), 54 in. steel pipe line from dam on south fork of Tolt River to regulating basin, SEATTLE, WASH. City, County-City Bldg., Seattle, Wash. Bids June 1, awarded June 8. CD 6/8, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

L. C. Smith & Co. and Concar Rand & Enterprises, Inc., 225 19th Ave., San Mateo, Calif., CA **$4,133,017** grading, paving 5.4 mi. six lane freeway, Bayshore Freeway incl. five interchanges, Santa Clara Co. Bids May 25. CD 6/2 under LB.

▲ **Guy F. Atkinson Co.**, P.O. Box 593, 10 W. Orange Ave., South San Francisco, Calif., LB **$1,047,867**, est. $1,444,583, Sched. 1, Trinity Power Plant, Spec. DC 5320, Central Valley Proj., CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lewiston, Calif. Bids June 8. CD 5/10.

E. W. Constr. Co., Creswell, Ore., LB **$2,712,275**, est. $3,201,678, Sched. 2, Clear Creek Power Plant, Central Valley Proj. Spec. DC 5320 (California).

▲† **United States Steel Co.**, 120 Montgomery St., San Francisco, Calif., LB **$1,667,464** (11 bidders), Sched. Item 1, furnishing and delivering penstocks and accessories for Clear Creek Power Plant; Item 2, furnishing and delivering penstocks and accessories for Trinity Power Plant, Trinity River Div., Central Valley Proj. DS 5334, CALIFORNIA Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver 2, Colo. Bids June 9. CD 5/9.

▲ **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., CA **$1,983,670**, est. $2,500,000, wharf reconstr. transit shed raising and rehabilitation, Long Beach Middle Harbor, Spec. HD 587, LONG BEACH, CALIF. Long Beach Harbor Dpt., 925 Harbor Plaza, Long Beach, Calif. Bids June 1, awarded June 6. CD 6/6, Under LB.

Papac Constr. Co., Inc., 2030 N. Hoyt Ave., El Monte, Calif., LB **$608,854**, est. $939,200 (10 bidders), Hansen Heights Channel from Burbank Channel to Stonehurst St., LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids June 3. CD 5/23.

▲ **E. T. Haas Co.**, 407 Harbor Blvd., Belmont, Calif., LB **$1,241,580**, clay pipe sewer, clay pipe sewer lateral, c.i. pipe, force main, manholes, 4 pumping stations, etc. Linda County Water Dist., MARYSVILLE, CALIF. Linda County Water Dist., Hy. 99 East, Marysville, Calif. Bids June 6. CD 5/18.

HAWAII—State Hy. Dpt., Punchbowl and Queen St., Honolulu,

J. M Tanaka, Inc. and Constr. Equipment, Inc., P.O. Box 1111, Honolulu, Hawaii, CA **$853,329**, ¾ mi. dual lane rein.-con. slab windward to the windward approach to the two Pali Tunnels, Honolulu. Bids May 5. CD 4/13.

BUILDINGS—LB & CA

▲ **Alfred Brown Co.**, Dooly Bldg., 109 W. 2nd South, Salt Lake City 1, Utah CA **$1,229,018** elevated PLAZA incl. Cafeteria, Gas Pump, etc. 200 car parking ramp, SALT LAKE CITY, UTAH. State Bldg. Bd., Capitol Bldg., Salt Lake City 14, Utah. Bids June 3 Awarded June 6 CD 6/8 under LB.

Joseph P. Howa. 2410 Beacon Dr., Salt Lake City, Utah LB **$556,386** general contract Cooperview ELEMENTARY SCHOOL, SANDY, UTAH. Jordan School Dist., 9361 S. State, Sandy, Utah. Bids June 2 CD 5/19.

▲ **Henry C. Beck Co.**, 3500 N. Central Ave., Phoenix, Ariz., CA **$3,450,000**, 13 story SECURITY ANNEX, 218-228 N. Central, PHOENIX, ARIZ., David H. Murdock Development Co., 3424 N. Central Ave., Phoenix, Ariz., Awarded June 9. Weaver & Drover, 128 E. Camelback Rd., Phoenix, Ariz., archts.

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA est. **$32,000,000** design and constr. KRAFT AND NEWSPRING PAPER MILL, SNOWFLAKE, ARIZ., Southwest Forest Industries, Inc., c/o contractor.

Cawdrey & Vemo, Inc., 3601 Fremont Ave., Seattle 3, Wash., CA est. **$300,000**, forest products research and product development LABORATORY, Overlake Park, BELLEVUE, WASH. Simpson Timber Co., White Bldg., Seattle 1. Wash.

▲ **Baugh Constr. Co.**, 922 Poplar Place, Seattle, Wash., LB **$2,152,790**, (6 bidders), 4 story, 55 x 193 ft., and 50 x 111 ft. rein.-conc. HOSPITAL ADDNS., SEATTLE, WASH., Virginia Mason Hospital Ass'n., 1111 Terry Ave., Seattle, Wash., Bids June 9. CD 5/4.

▲ **H. M. Skov**, 2512 S. 1 St., Yakima, Wash., CA **$1,000,000**, air-conditioned APARTMENT, swimming pool, YAKIMA, WASH., Starliter, Inc., c/o S. J. Rich, 917½ Summitview Ave., Yakima, Wash.

▲ **A. V. Petersen Co.**, Box 2368, Portland, Ore., LB **$1,270,890** (5 bidders) Second unit, PHYSICS-CHEMISTRY bldg., Oregon State College, CORVALLIS, ORE. Oregon Bd. Higher Educ., Box 5175, Eugene, Ore. Bids June 3. CD 5/2.

▲ **W. H. Shields Constr. Co.**, 252 Taylor St., Eugene, Ore. LB **$1,268,468** (7 bidders) 150 units low rent HOUSING SPRINGFIELD, ORE. Lane County Housing Authority, Courthouse, Eugene, Ore. Bids June 1. CD 5/9.

Continental Bldg. Co., 2005 W. Burbank Blvd., Burbank, Calif., LB **$150,000**, 2 story, 22,325 sq. ft. concrete WAREHOUSE, BURBANK, CALIF. Andrew Jergens Co., 99 W. Verdugo Ave., Burbank, Calif. Joe Jordan, 12345 Ventura Blvd., Studio City, Calif., archt.

▲ **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., LB **$1,232,500** (7 bidders), Base Bid, 140x200 ft. w/bsmnt. and mezzanine, rein.-con., brick veneer ASSEMBLY HALL, University of California at Davis Campus, DAVIS, CALIF. University of California, Office of Architects & Engineers, Davis Campus, Davis, Calif. Bids June 7. CD 5/19.

▲ **Robert E. McKee General Contractor, Inc.**, 4701 San Fernando Rd. West, Los Angeles, Calif., LB **$1,430,700** 2 story, 70,000 sq. ft. rein.-con. THIRD WARD LIVING UNIT, Youth Training School, Dpt. Youth Authority. W9-0-431GC-1, CHINO, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. Bids June 9 CD 5/6.

Tom E. Norcross Inc., 6053 Atlantic Ave., Long Beach, Calif., CA **$140,000**, 19 x 206 ft. concrete, masonry MANUFACTURING PLANT ADDN., 15001 S. Figueroa St., GARDENA, CALIF. Fred G. Burg, 15001 S. Figueroa St., Gardena, Calif. Thos. L. Sanders Assoc., 205 E. Broadway, Long Beach Calif., archts.

Packard Constr. Co., 2230 Corinth Ave., Los Angeles 64, Calif., LB **$496,073**, est. $460,000, (7 bidders), Short Ave. SCHOOL addn., 12814 Maxella Ave., LOS ANGELES, CALIF. Bd. of Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids June 9. CD 5/31.

▲ **Allen M. Campbell Co., General Contractors, Inc.**, P.O. Box 774, Santa Ana, Calif., CA **$1,612,000**, 3 story L-shaped, 84,000 sq. ft. ADMINISTRATION and CLASSROOM, Kellogg-Voorhis Campus, California State Polytechnic College, W.O. 4304GC-37, POMONA, CALIF. State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Calif. Bids June 1. CD 6/10, under LB.

Haas & Haynie Constr. Co., 244 Pine St., San Francisco, Calif., LB **$412,600**, (9 bidders), 2 story, steel frame, precast concrete COMMERCIAL BLDG., REDWOOD CITY, CALIF. California Pacific Title Insurance Co., 148 Montgomery St., San Francisco, Calif. James P. Lockett, 1212 E. Main St., Visalia, Calif., archt. Bids June 1

J. Putnam Henck, 3947 Sierra Way, San Bernardino, Calif., CA **$722,407**, 4 story, 73x108 ft. rein.-con. PROBATION and JAIL, Orange St. between 10th and 11th Sts., RIVERSIDE, CALIF. Riverside Co., 4050 Main St., Riverside, Calif. Herman O. Ruhnan, Mission Inn, Rotunda, 3616 Main St., Riverside, Calif., archt.

Dan Caputo Constr. Co., 650 Race St., San Jose, Calif., LB **$564,887** (8 bidders) wood frame, concrete block FRATERNAL LODGE, Dining Room, etc., SAN JOSE, CALIF. Elks' Lodge No. 522, c/o Binder & Curtis and Fred Marburg, archts., 154 E. Jackson St., San Jose, Calif. Bids June 2. CD 5/24.

▲ **Williams & Burrows, Inc.**, 500 Harbor Blvd., Belmont, Calif., CA over **$1,000,000**, (Increment 3 & 4), two-1 story, tilt-up concrete PLANT addns. SAN CARLOS, CALIF. Eitel-McCullough Inc., 301 Industrial Way, San Carlos, Calif. Vincent G. Raney, 233 Post St., San Francisco, Calif., archt. CD 6/1, under LB.

Eastbury Homes, Inc., 10835 Santa Monica Blvd., Los Angeles, Calif., Owner Builds, **$462,000**, 44 stucco DWELLINGS, Rincon Ave., Mascatine St., Branford St., PACOIMA, CALIF. A. R. Brown Jr., 1520 Greenview Dr., La Habra, Calif., archt.-engr.

Southwood Constr. Co., 2918 W. Compton Blvd., Gardena, Calif., CA **$714,700**, 47 stucco DWELLINGS, Elm Ave., 230th St., Tract 18657, TORRANCE, CALIF. Various Corp., 2918 W. Compton Blvd., Gardena, Calif.

Arthur Pinner Jr., 9510 S. Main St., Los Angeles, Calif. LB **$752,000** (9 bidders) South HIGH SCHOOL, TORRANCE, CALIF. Torrance Unif. School Dist., 2335 Plaza Del Amo, Torrance, Calif. Roy Donley, 8320 Melrose Ave., Los Angeles, Calif., archt. Bids June 3. CD 12/23/59.

Kemp Brothers, 8750 Mettler St., Los Angeles, Calif., LB **$927,000** HEALTH BLDG., RIVERSIDE, CALIF. Riverside Co., Court House, Riverside, Calif. Bids June 1. CD 5/23.

Jas. H. Woodyard, 6235 Lankershim Blvd., North Hollywood, Calif., Owner Builds, **$133,000**, 60x400 ft. concrete block INDUSTRIAL PLANT, 13400 Saticoy St., VAN NUYS, CALIF.

▲ **Pacific Coast Builders**, 1 South Park, San Francisco, Calif., LB **$3,866,000**, (8 bidders), base bid, rein.-con., concrete block Southwest SENIOR HIGH SCHOOL, Eucalyptus Dr., SAN FRANCISCO, CALIF. San Francisco Unif. School Dist., 135 Van Ness, San Francisco, Calif. Bids June 8. CD 6/7.

J. C. Bryan, 146 E. Orangethorpe Ave., Anaheim, Calif., Owner Builds, **$160,000**, 1 story, 8,000 sq. ft. rein.-con. six INDUSTRIAL PLANTS, Center St., SANTA ANA, CALIF. Andrews-Crowder & Assoc., 327 E. Washington Ave., Santa Ana, Calif., archts.

▲ **Bredger Constr. Co.**, 2135 W. Ball Rd., Anaheim, Calif., CA **$1,770,000**, 30 stucco APARTMENTS, Minnie St., Tract 3533, SANTA ANA, CALIF. Rom Investment Co., 2180 Harbor Blvd., Anaheim, Calif.

Encino Constr. Co., 16911 Ventura Blvd., Encino, Calif., LB **$473,059**, (5 bidders), concrete and masonry Knolls ELEMENTARY SCHOOL, SIMI, CALIF. Simi Valley Unif. School Dist., 1725 Deodroa St., Simi, Calif. Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., Los Angeles, Calif., archts. Bids June 2. CD 2/4/59.

Paul Pace, 1042 Rosario Dr., Thousand Oaks, Calif., Owner Builds, **$633,365**, 46 stucco DWELLINGS, E. Rose St., E. McElhany St., N. Conception Ave., E. Alvin St., E. Evergreen St., N. Lucas Dr., THOUSAND OAKS, CALIF.

West America Constr. Co., 7807 Sunset Blvd., Los Angeles, Calif., CA **$194,000**, 44,850 sq. ft. WAREHOUSE and OFFICE, 3501 Lomita Blvd., TORRANCE, CALIF. R. G. Harris Co., 2639 S, La Cienega Blvd., Los Angeles, Calif.

Savoy Development Co., 241 S. Robertson Blvd., Beverly Hills, Calif., Owner Builds, **$655,921**, 28 DWELLINGS, Tract 3596, TUSTIN, CALIF.

▲ **Valleywood Bldg. Co.**, 8549 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, **$2,368,800**, 210 frame, stucco DWELLINGS, Tract 21893, VAN NUYS, CALIF. Martin Stern Jr., 8325 Wilshire Blvd., Beverly Hills, Calif., archt.

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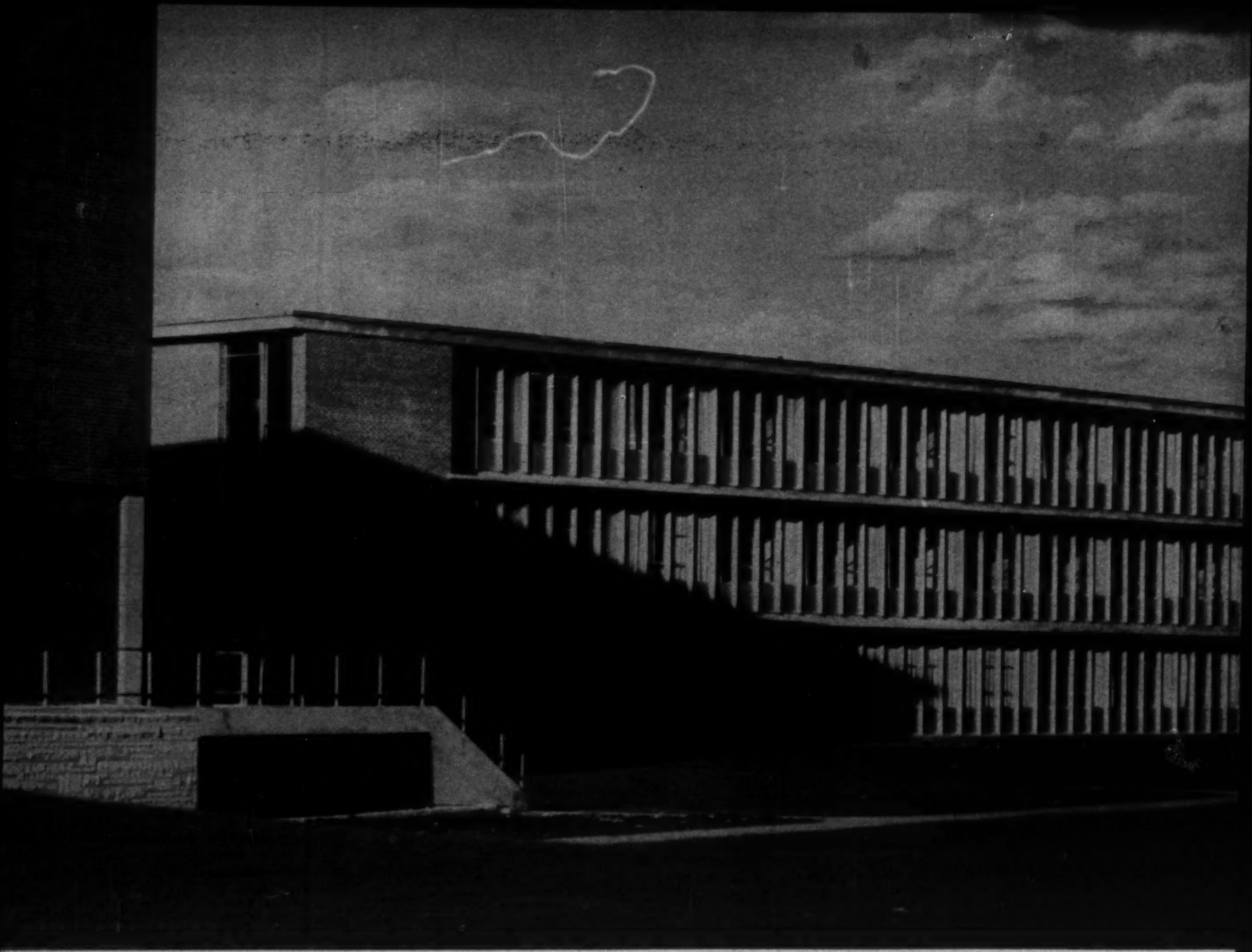

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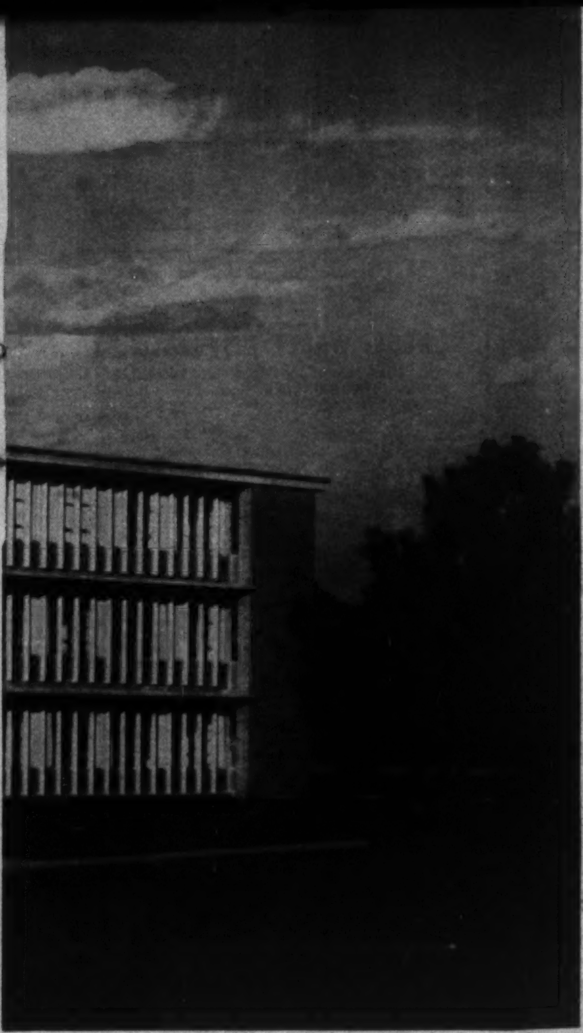

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Tex., **Killeen**—City, City Hall, voted bonds, water distr. sys., $525,000; water supply expansion, $75,000; water pumping unit, $75,000; elevated water storage, $75,000. CD 5/16.

Okla., **Chickasha**—City, City Hall, 15 mi. c.i. flow line from lake to Chickasha, $500,000. Woodrow Bowers, Chickasha, staff engr.

SEWERS, WASTE DISPOSAL

▲ Ala., **Muscle Shoals**—City, City Hall, sanitary sewer imprvts., $1,000,000. Hardy Evans, Jackson Highway, Sheffield, consult. engr.

▲ Calif., **Pacifica**—City and San Mateo County, City Hall, voted $1,600,000 bonds June 7, sewer and water sys. imprvs. CD 5/12.

▲ Ill., **Godfrey**—Godfrey Twp., Town Bd., sanitary sewerage system, treatment facilities and sewer lines, $1,000,000-$1,600,000. Sheppard, Morgan & Schwaab, 10 E. Broadway, Alton, consult. engrs. CD 12/11.

▲ Ill., **Jerseyville**—City, City Hall, water and sewer imprvt., $2,500,000. Warren & Van Praag, Inc., 253 S. Park St., Decatur, consult. engr.

Ill., **LeRoy**—City, City Hall, sanitary and storm water sewers, $350,000-$750,000. Farnsworth & Wylie, 220 W. Jefferson St., Bloomington, consult. engrs.

▲ Mo., **Jefferson City**—City, City Hall, sewer sys. extension, $2,750,000. Haskins, Riddle & Sharp, 1009 Baltimore Ave., Kansas City, Mo., consult. engrs. CD 11/21/56.

Mo., **Washington**—City, City Hall, sewage disposal plant, lateral and trunk sewer lines, etc. $900,000. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., consult. engrs.

▲ **North Carolina**—Norfolk Southern Railway Co., Terminal Bldg., Norfolk, Va., bridge, Albemarle Sound, Chowan and Washington Counties, $2,000,000.

▲ O., **Elyria**—City, City Hall, sewage plant expansion, $3,100,000. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, consult. engrs. CD 1/12/59.

Vt., **Barre**—Bd. Selectmen, sewerage sys. and sewage treatment plant, Proj. No. P-VT-3048, $702,830. Constr. in 1962.

BRIDGES

O., **Toledo**—Bd. Comrs. Lucas Co., Courthouse, bridge, Broadway Ave., over New York Central R.R., $400,000. Sanzenbacher, Miller & Brigham, 3023 Sylvania St., consult. engr. CD 12/21/44.

Tex., **San Antonio**—City, City Hall, bond election June 28, Guadalupe St. Underpass, $900,000. CD 9/3/52.

▲ **WASHINGTON**—State Hy. Comn., Transportation Bldg., Olympia,

Cowlitz Co.—1,080 ft. bridge over Cowlitz River on Primary St. Hy. 5 at Mayfield, $1,200,000. W. A. Bugge, c/o owner, st. hy. director.

▲ **OHIO**—State Hy. Dpt., State Dpt. Bldg., Columbus, Zone 15,

Cuyahoga Co.—relocating Rte. 422 through Timberlane section, Solon, $1,000,000.

Franklin Co.—east and south legs, Columbus Inner Belt System, Columbus, $20,000,000.

Montgomery Co.—US 35 expressway 1.4 mi. from east corp. limit to St. Nicholas St. near Linden Ave., Dayton, $5,500,000.

▲ Tex., **San Antonio**—City, City Hall, bond election June 28, North-South Expressway, business section to near airport, $3,500,000; Hy. 90 west, southwestern section of city, $3,900,000; Kelly Field Air Force Base access road, $1,700,000. CD 8/12/49.

EARTHWORK, WATERWAYS

▲ **Oregon**—Tillamook Peoples Utility Dist., Tillamook, hydro electric dam, Trask River, $12,560,000. Constr. 1962.

AIRPORTS

▲ Ont., **Ottawa**—HANGAR, etc.—Dpt. Transport, Hunter Bldg., hangar, $1,200,000; terminal, $550,000; standby power plant, underground distribution system, $175,000; apron for hangar, $200,000.

LATIN AMERICA

▲ **El Salvador, San Salvador** — HOSPITAL — Instituto Salvadoreno del Seguro Social 4a Avenida Norte 132, San Salvador, plans by Rosenfield & Rosenfield, W. 45th St., New York, N. Y., hospital. $2,500,000. Atilio Garcia Prieto, 55a Av. Sur 5, San Salvador, El Salvador, engrs.

FOREIGN

▲ **India**—STEAM GENERATOR, etc.—Ahmedabad Electricity Co., Ltd., Bombay, 30,000 kw steam generator addn., control facilities, boilers and related equipment, at Power Plant. $3,900,000.

▲ **INDIA**—Govt. of India, New Delhi, 7,394 ft. bridge over Mahanadi River near Cuttack, Orrissa State. $3,000,000.

▲ **Yugoslavia, Zagreb**—PLANT—Organsko Kemijska Industrija (OKI), Boskoviceva 33, Zagreb, plastic and chemical plant. $23,000,000 (DLf loan).

UNCLASSIFIED

▲ **Calif., San Diego**—PORT DEVELOPMENT—City, Civic Center, voted $3,600,000 bonds June 7, port development to incl. warehouse, truck terminal and bulk cargo facilities, 10th Avenue Marine Terminal. CD 4/6.

▲ **Calif., San Francisco**—MUSEUM IMPRVS.—City and San Francisco Co., Dpt. P. Wks., City Hall, voted $2,725,000 bonds, wing at De Young Museum, Golden Gate Park. CD 2/17.

▲ **Illinois**—GAS DISTRIBUTION PIPE LINE—Central Illinois Light Co., 300 Liberty St., Peoria, 24 in. gas distribution pipe lines, from gate station, Eastern Pipeline Co., near Powell Rd., west across Illinois River near Mt. Hawley, 1960-61, $2,500,000.

▲ **N. C., Cherokee**—DISNEYLAND-TYPE AMUSEMENT etc.—Hubert R. Mitchell, c/o William R. Orr & Assocs., engrs., 4907 Ohio Garden Rd., Houston, Tex., Disneyland-type plastic-engineered amusement and recreation park, near here, $10,000,000.

▲ **O., Cleveland**—PORT DEVELOPMENT—City, City Hall, Zone 14, bond election Nov. 8, port development, $3,000,000. CD 11/10/55.

▲ **Virginia**—TRANSMISSION LINES—Shenandoah Valley Electric Coop., Harrisonburg, 26 mi. transmission lines, 3 sub-stations, Rockingham, Auguste, Shenandoah and Page Counties, $1,270,000.

PUBLIC BUILDINGS

▲ **Alaska, Ketchikan**—HOSPITAL—City, City Hall, hospital. $1,787,100. Constr. 1962.

▲ **Calif., Escondido**—SCHOOL—Escondido Union High School, 240 So. Maple St., plans by George Lykos, 616 Spreckles Bldg., San Diego 1, Calif., Poway high school, Poway. $1,171,880. CD 4/26.

▲ **Calif., Los Angeles**—JAIL—Bd. Suprvs. Los Angeles County, 501 Hall of Records, voted $6,315,000 bonds June 7, jail. CD 4/20.

▲ **Calif., Los Angeles**—OUT-PATIENT CLINIC—Bd. Suprvs. Los Angeles County, 501 Hall of Records Bldg., voted $15,466,000 bonds June 7, out-patient clinic, at General Hospital. CD 4/20.

▲ **Calif., Riverside**—SCHOOLS—Riverside City High School Dist., 3954 12th St., voted $4,500,000 bonds June 7, schools. CD 6/26/56.

▲ **Calif., San Diego**—SCHOOLS—San Diego Unif. School Dist., 4100 Normal St., voted $44,927,000 bonds June 7, schools. CD 3/23.

▲ **Calif., San Mateo**—SCHOOLS—San Mateo Union High School Dist., 650 N. Delaware, bond election Oct. 11, San Bruno high school, San Bruno and Hillsdale High school addn. $3,750,000. CD 5/23/56.

▲ **Calif., San Rafael**—NURSING HOME, etc.—Bd. Suprvs. Marin Co., Courthouse, voted $2,250,000. bonds June 1, county nursing and custodial home for aged and indigent. CD 4/19.

▲ **Calif., Santa Cruz**—JUNIOR COLLEGE—Cabrillo Junior College Dist., 315 Third Ave., Watsonville, voted $6,600,000 bonds June 7, junior college. CD 5/2.

▲ **Colo., Fort Morgan**—SCHOOLS—School Dist. No. 3, schools, $1,200,000.

▲ **Colo., Holyoke**—HOSPITAL, etc.—Holyoke Dist. Hospital, plans by Nixon & Jones, 7580 W. 16th Ave., Denver, hospital and nursing homes, $1,000,000.

▲ **Colo., Lakewood**—SCHOOLS—School Dist. R-1, 1580 Yarrow St., Wheat Ridge Senior High School addn., Wheat Ridge, $400,000; Arvada Senior High School, W. 63rd Ave. and Simms St., Arvada, $1,900,000; Evergreen Elementary School, Evergreen, $687,000; Golden Junior High, 1101 Ulysses St., Golden, $1,200,000; North Arvada Junior High School, $1,400,000; Alameda Junior High School addn., near Lakewood, $686,000. CD 6/7.

▲ **Conn., Wethersfield**—OFFICE—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Olson & Miller, 742 Asylum Ave., Hartford, State Motor Vehicle Dpt., Office, State Prison Grounds, $1,800,000. CD 6/6.

▲ **Fla., Clearwater**—SCHOOLS—Pinellas Co. Bd. Pub. Instruction, bond election Nov. 8, schools, $6,000,000. CD 4/26 and 4/29.

▲ **Fla., St. Catherine**—PRISON—Bd. Comrs. State Institutions, Tallahassee. prison, south of Withlacoochee River, $2,000,000-$3,000,000.

▲† **Idaho, Idaho Falls**—REACTOR—Atomic Energy Commission, Idaho Operations Office, engineering test reactor at National Reactor Testing Station. to be known as ETR2 with 250,000-kw capacity, $24,000,000. CD 7/29/59.

▲ **Kan., Garden City**—POWER PLANT—City, City Hall, voted $2,750,000 bonds May 24, power plant. Black & Veatch, 1500 Meadowlake Parkway, Box 8405, Kansas City 14, Mo., engrs. CD 5/10.

▲† **Md., Annapolis**—REHABILITATION OF BANCROFT HALL—Area P. Wks. Office, Chesapeake, Naval Weapons Plant, Wash., D. C.., rehabilitation of Bancroft Hall, Wings 1 through 6, U.S. Naval Academy. $16,000,000 (no appropriation). George M. Ewing Co., 1028 Connecticut Ave. N.W., Wash., D. C., engr. CD 11/11/59.

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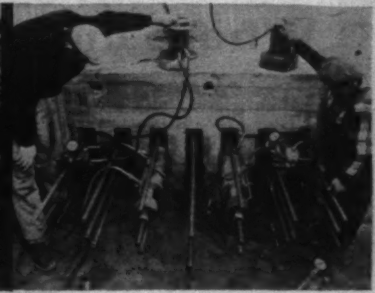

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▲ **Md., College Park**—MATHEMATICS & PHYSICS, etc.—Maryland University, College Park, plans by Hall, Ritter & Sprinkler, 4804 Roland Ave., Baltimore, Md., mathematics and physics bldg. **$400,000**; plans by Hopkins & Pfeiffer, 10 E. Mulberry St., Baltimore, Md., music, art and speech bldg. and auditorium-theater. **$2,500,000**; plans by Rinaudot & Coupard, 4709 Montgomery Lane, Bethesda, Md., wing to Taliferro Hall, **$565,000**. CD 5/5/59.

▲ **N. Y., Garden City Park**—HIGH SCHOOL—Mineola Bd. Educ. Union Free School Dist. No. 10, Emory Rd., Mineola, plans by Geo. J. Dippel, 187 Brooklyn Ave., Massapequa, N. Y., high school, 12.5 acre, County Court House Rd., Washington Ave., Armstrong Rd., Madison Ave. **$4,150,000**. Kenneth J. Tomann, 450 7th Ave., New York 1, N. Y., structural engr. Gustave B. Weiser, 111 Broadway, New York 6, N. Y., electrical engr.

▲ **N. C., Hickory**—FEDERAL OFFICE, etc.—General Services Admin., 50 7th St. NE, Atlanta, Ga., plans by Clemmer & Horton, 226 2nd St. N.W., Hickory, lease, build federal office, post office addn. **$1,300,000**. CD 2/4.

▲ **Pa., University Park**—BIOLOGICAL SCIENCE, etc.—Pennsylvania State University, First Unit, biological science, **$2,000,000**; complete Willard Bldg., **$2,000,000**; expanding agricultural facilities, **$1,500,000**; CD 9/28/56, service and general stores bldg., **$1,750,000**; computer facilities center, Unit I, **$750,000**.

▲ **S. C., Columbia**—FOOD SERVICE CENTER—South Carolina State Hospital, P.O. Drawer 189, plans by Lafaye, Farr, LaFaye & Assocs., 1226 Sumter St., Columbia, S. C., 51,300 sq. ft. food service center. **$1,050,000**. Johnson & King, 1225 Pickens St., Columbia, S. C., structural engrs.

S. D., Pierre—SCHOOLS—Bd. Educ., voted bonds, schools. **$800,000**. Harold Spitznagel & Assocs., 1800 S. Summit St., Sioux Falls, S. D., archts. CD 4/22.

▲ **Tenn., Harriman**—HOUSING—Harriman Administration, city hall, plans by Morton & Sweetser, 203 Journal Bldg., Knoxville, 100 units, housing, **$1,000,000**. Famco Engineering Co., 838 Main St., Knoxville, consult. engrs. CD 10/26/59.

▲ **Tex., Dallas**—SCHOOL—Dallas Independent School Dist., 3700 Ross Ave., Dallas, plans by Goodwin & Cavitt, Vaughn Bldg., Dallas and Mark Lemmon, 201 Thomas Blvd., Dallas, No. 1 High School Old Seagoville Rd. and Masters Dr. **$3,400,000**. R. L. Rolfe, 2401-A Bryan St., Dallas, consult. engr. CD 3/16.

▲ **Utah, Salt Lake City**—DORMITORY—State Bldg. Bd., State Capitol, Salt Lake City, Zone 14, plans by William F. Thomas, 16 N. State St., Salt Lake City 1, Utah, 3 story, 110,000 sq. ft. brick, masonry curtain wall, 440 single students dormitory. **$1,850,000**. Bids in Fall of 1961. CD 10/8/57.

▲ **Va., Richmond**—SCHOOLS—Henrico County School Bd., 21 and Main Sts., voted **$9,500,000** bonds June 7, Central Gardens School, **$600,000**; High School Varina Dist., **$600,000**; Virginia Randolph School addn., **$400,000**; High School 1, **$1,900,000**; High School 2, **$1,900,000**; High School 3, **$1,900,000**; School C, **$700,000**; School D, **$700,000**; School E, **$700,000**; School F, **$700,000**. CD 4/29.

▲ **Va., Williamsburg**—LIBRARY, etc.—State, Dpt. Educ., State Office Bldg., plans by Walford & Wright, 103 W. Cary St., library, College of Williams and Mary **$3,000,000**; CD 4/14. women's dormitory, **$580,000**. CD 1/21; gymnasium, **$680,000**. CD 3/10/54.

▲ **Wash., Longview**—SCHOOL—School Dist. 122, defeated bonds May 24 on special levy to provide financing junior high school, **$1,000,000**. CD 4/22.

COMMERCIAL BUILDINGS

▲ **Ariz., Phoenix**—BARROW NEUROLOGICAL INSTITUTE—Barrow Neurological Institute, St. Joseph's Hospital, 350 W. Thomas Rd., Barrow Neurological Institute, **$2,376,000**.

▲ **Ariz., Tucson** — APARTMENT — Paul Monaghan & Assocs., c/o Scholer & Fuller, archts., 2566 N. Campbell Ave., 9 story apartment, S.W. corner of N. Granado and Paseo Redondo, Snob Hallow, **$2,000,000**.

▲ **Calif., Lakeport** — RETIREMENT & RECREATION CENTER—Plumbing & Pipe Fitting UA Local Union No. 38, 1621 Market St., San Francisco, Calif., plans by Harold L. Sleight, 525 Commercial, San Francisco, Calif., Retirement and Recreation Center incl. two apartments, club house, swimming pool, commercial bldgs., boat house, utilities, Clear Lake. **$2,000,000**.

▲ **Calif., Orange**—HOSPITAL AND ADDN.—St. Joseph's Hospital, Stewart Dr., plans by John W. Maloney, Central Bldg., Seattle, Wash., 115-bed hospital addn. and 60-bed children's hospital, **$4,000,000**.

▲ **Calif., Palo Alto**—FRATERNITY HOUSES—Stanford University, c/o John Carl Warnecke & Assocs., archts., 111 New Montgomery St., San Francisco, Calif., eight 2-story fraternity houses, Stanford University Campus. **$3,000,000** CD 4/8/53.

▲ **Ga., Augusta** — MOTOR HOTEL — Richmond Hotel, Broad St., plans by Scroggs & Ewing, 1331 Greene St., 5 story, 61,000 sq. ft. motor hotel, Ellis and Greene Sts., **$2,000,000**.

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▲ **Ill., Alton**—HEADQUARTERS—Alton Young Men's Christian Assn., Alton, headquarters, Henry St., **$1,250,000.**

▲ **Ill., Chicago**—SEMINARY—Catholic Bishop of Chicago, 719 N. Wabash Ave., plans by Gaul & Voosen, 165 E. Erie St., Quigley Preparatory Seminary, 78th and Western Ave., **$3,500,000.**

▲ **Mo., St. Louis**—MEDICAL CENTER, OFFICES, ETC.—Forest Park Medical Center, c/o Rosenblum Constr. Co., 11304 Olive Street RD., Creve Coeur, Zone 41, plans by J. Richard Shelley, 3401 Colorado, Long Beach, Calif., two 10-story offices, 10-story inn for medical personnel, senior citizens, and a 4-story parking garage, Forest Park Blvd., Laclede, Euclid and Taylor Aves., zoning change voted by Bd. Aldermen, **$18,000,000.** Bids Fall, 1960.

▲ **N. J., Edison**—GARDEN APARTMENTS—Empire Construction Co., P.O. Box 287, South River, plans by Erwin Gerber, 11 Commerce St., Newark, Garden apartments, Edmond St., **$2,500,000.** Raymond Wilson Assoc., 46 Paterson St., New Brunswick, consult. engrs.

▲ **N. J., Paterson** — APARTMENTS — Jos. Brunetti Constr. Co., 311 South Washington Ave., Bergenfield, forty 800-unit apartments, Second Ward, **$8,000,000-$9,000,000.**

▲ **N. Y., Bay Shore**—SHOPPING CENTER—Macy's New York, Herald Sq., New York, Zone 1, plans by Richard G. Belcher, c/o owner, shopping center, Sunrise Hy., Greenwood Rd., Brooks Rd. and Penataquit Ave. **$10,000,000.**

▲ **N. Y., Ithaca**—GRADUATE SCHOOL—Cornell University, plans by Warner, Burns, Toan & Lunde, 414 Madison Ave., New York, 3 stories and bsmnt., Graduate School of Business & Public Administration, **$1,500,000.** Construction 1961.

▲ **N. Y., New York**—LIBRARY & RESEARCH—Cornell University Medical College, 1300 York Ave. New York, Zone 13, plans by Rogers & Butler, 219 E. 44th St., New York 17, N. Y., Samuel J. Wood library and research bldg., 1300 York Ave. **$3,000,000.** Meyer, Strung & Jones, 230 Park Ave., New York 17, N. Y., mechanical engrs. Purdy & Henderson, 1 Madison Ave., New York 10, N. Y., structural engrs. CD 7/2/59.

▲ **N. Y., New York**—APARTMENT—L. Denberg & A. Hirsch, 521 5th Ave., New York, Zone 17, plans by H. J. Feldman, 415 Lexington Ave., New York 17, N. Y., 13 story apartment, 51-69 East 87th St. **$2,250,000.**

▲ **N. Y., New York**—APARTMENT—V. Leventon & K. Schlesinger, 15 E. 40 St., 20 story apartment, 1245 Park Ave., 101-13 E. 96 St. **$4,000,000.**

▲ **N. Y., New York**—OFFICE—Sam Minskoff & Sons, 521 5 Ave., Zone 17, plans by Emery Roth & Sons, 400 Park Ave., Zone 22, 29 story, 515,000 sq. ft. office, 250 Broadway, between Park Place and Murray St., facing City Hall Park, **$20,000,000.**

▲ **N. Y., New York**—SCIENCE CENTER—New York Academy of Sciences, 2 E. 63rd St., New York, Zone 21, plans by W. S. Thompson, 60 E. 42nd St., New York 17, N. Y., 25 story science center. **$1,000,000.**

▲ **N. Y., New York** — APARTMENT — Syndicate, c/o S. J. Kessler & Sons, archts., 551 5th Ave., New York 16, N. Y., 21 story apartment, N.W. corner 1st Ave. and East 76th St. **$5,000,000.**

▲ **N. Y., New York**—OFFICE—Marvin S. Winter, 521 5th Ave., New York, Zone 17, plans by Robert Bien, 342 Madison Ave., New York 17, N. Y., 11 to 26 story, 300,000 sq. ft. Lincoln Sq. Plaza office, west side Broadway between 66th and 67th Sts. **$10,000,000.**

▲ **N. C., Greensboro**—SHOPPING CENTER, etc.—Kirkman & Koury, Inc., 2103 Bessemer Ave., plans by Edward D. Stone & Assocs., 38 E. 65th St., shopping center and residences, **$20,000,000.** CD 6/1.

▲ **O., Euclid**—MOTOR LODGE—Euclid 279th Corp., 16003 Chadbourne Rd., Cleveland, Zone 20, plans by Bertram S. Koslen, 16828 Chagrin Blvd., Cleveland, Zone 20, 96 unit Howard Johnson Motor Lodge, pool, **$1,500,000.**

▲ **O., Evendale**—MOTOR HOTEL, etc.—Executive Inn Motor Hotels Corp., c/o Fred C. Walters, 1845 Colmar Lane, Cincinnati, plans by Carlos B. Schoeppl, 4400 Post Rd., Miami Beach, Fla., 6 story motor-hotel, commercial center, **$13,000,000.** Constr. 1961. CD 6/8.

▲ **O., North Olmsted**—COMMERCIAL—Buckeye Enterprises, Inc., 23203 Lorain St., four commercial bldgs., **$5,000,000.**

▲ **Pa., Phila.**—VETERINARY RESEARCH AND INSTRUCTION—General State Auth., 18 and Herr Sts., Harrisburg, veterinary research and instruction, University of Pennsylvania, **$2,000,000.** A. F. Jones, c/o owner, ch. engr.

▲ **Tex., Abilene**—SHOPPING CENTER—Globe Development Co., Knuckles Crossing Rd., Austin, shopping center, **$2,750,000;** sanitary, storm sewer, **$119,000;** water lines, **$57,500;** area earthwork, **$61,000** hard-paved area and auto center, **$90,000.**

▲ **Tex., Beaumont**—BANK-OFFICE, etc.—BA 7/10—American National Bank, 470 Orleans St., 5 story, bsmnt., 140,000 sq. ft. bank-office, $2,500,000; 2-level parking garage, 5 drive-in teller windows and tunnel leading to Main Bank-Office, $4,000,000-$4,500,000. Harrell & Hamilton, 819 Rep. National Bank Bldg., Dallas, Tex., archts. Hunt & Joiner, 4512 N. Central Expressway, Dallas, Tex., and Wm. K. Hall, Braniff Bldg., 4125 Sperry, Dallas, Tex., engrs. CD 10/15/59.

▲ **Utah, Salt Lake City**—OFFICE—Prudential Federal Savings & Loan Assn., 125 S. Main St., Zone 1, plans by William L. Pereira & Assocs., archts.-engrs., 1231 W. 5th St., Los Angeles, Calif., 15 story office, 117-121 S. Main St. **$5,000,000-$6,000,000.**

▲ **Va., Arlington**—SHOPPING CENTER—E. J. P. Corp. (James H. Berkey), 320 6 St. S., shopping center, **$2,000,000.**

▲ **Va., Charlottesville**—SUBDIVISION—John B. Rogen, 920 Harriss St., 200-house subdivision, Ednam Forest, **$2,000,000.**

▲ **Va., Roanoke** — SHOPPING CENTER — Giant Food Properties, Inc., 1728 L St. N.W., Wash., D. C., shopping center, **$2,500,000-$5,000,000.**

▲ **Va., Richmond** — HOSPITAL — Catholic Diocese of Richmond, 800 Cathedral Place, plans by Ballou & Justice, 300 W. Franklin St., and Edw. F. Sinnott & Son, 112 E. Cary St., hospital, **$3,000,000.** CD 10/13.

▲ **Wash., Mercer Island**—APARTMENTS—S. P. Wertheimer & Assocs., Inc., 5911 77 St. S.E. Plans by H. J. Haguewood, 4219 92 St. S.E., 3 Mercer Isle apartments, **$1,500,000.** Constr. in Sept.

▲ **Wash., Seattle**—OFFICE—C. F. Clise Agent, Inc., Securities Bldg., plans by Bittman & Sanders, Securities Bldg., 30 story addn. to 4 story office, 4 and Virginia Sts., **$25,000,000.** Constr. in 1963.

▲ **Ont., Brighton**—COTTAGE—Arrigo Bros., c/o Town Planning Consultants, Ltd., archts., 614 Church St., Toronto, cottage subdivision, **$2,000,000.** (Correction—Cost.) CD 6/6.

INDUSTRIAL BUILDINGS

▲ **Calif., Palo Alto**—PLANT ADMINISTRATION, etc.—Varian Assocs., Hansen Way, 2 story, 40,000 sq. ft. plant administration, 1 story, 19,000 sq. ft. office, Stanford Industrial Park. **$1,500,000.**

▲ **Conn., Clinton**—PLANT—Universal Wire Co., S County Lane, East Greenwich, R. I., 1 story, 120,000 sq. ft. masonry, steel mfg. plant, Morgans Landing, **$1,200,000.**

▲ **Fla., Jacksonville**—PLANT—Kaiser Gypsum Co., 1924 Broadway, Oakland 12, Calif., gypsum bldg. products plant, Dames Point, over **$3,000,000.** Constr. 1961.

▲ **Fla., Tampa**—PLANT—Pepsi-Cola Co., 1208 E. Lafayette St., 55,000 sq. ft. bottling plant, **$1,000,000.**

▲ **Ill., Momence**—PLANT—Agar Packing Co., Inc., 4057 S. Union Ave., Chicago, hog processing plant, meat packing, **$1,500,000.**

Iowa, Newton—WAREHOUSE—The Maytag Co., Newton, 73,000 sq. ft. steel frame warehouse addn. **$700,000.**

▲ **Ky., South Shore**—PLANT—Durez Plastics Div. Hooker Chemical Co., Box 344, Niagara Falls, N. Y., chemical plant for synthetic phenol. **$3,000,000.** To go ahead 1961.

▲ **Mo., St. Louis County**—PLANT—Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Zone 33, plans by Sverdrup & Parcel, Inc., archts.-engr., 915 Olive St., St. Louis 1, Mo., 1 story, 265,000 sq. ft. masonry, concrete, steel distribution transformer mfg. plant, Lackland Ave. Over **$2,000,000.** CD 2/15.

▲ **N. J., Totowa**—PLANT—Harris & Sons Steel Co., 33 Passaic Ave., Kearny, plant, Riverview Drive, **$1,000,000.** Harris K. Smith, 408 Summit Ave., Jersey City, consult. engrs.

▲ **N. Y., Brooklyn** — LITHOGRAPH PLANT — Ivy Hill Lithograph Corp., 1 Ivy Hill Rd., plans by Matthew J. Warshaver, 4 Cromwell Pl., White Plains, N. Y., lithograph plant. Under **$1,000,000.** Fraioli-Blum-Yesselman, 250 E. 43rd St., New York 17, N. Y., structural engrs.

▲ **N. Y., Geddes**—ENGINEERING LABORATORY, etc.—Owner, c/o General Electric Co., lessee, Court St., Syracuse, N. Y., 160,000 sq. ft. engineering laboratory and office, Van Vleck Rd. and Seneca River for Heavy Military Electronic Div. **$1,600,000.**

▲ **N. Y., Niagara Falls**—PLANT—Goodyear Tire & Rubber Co., 1144 E. Market, Akron, Ohio, expansion, vinyl resin plant, **$1,000,000.**

▲ **O., Powhatan Point**—PLANT—North American Coal Corp., 12800 Shaker Blvd., Cleveland, Zone 20, high-purity aluminum sulphate from coal mine waste plant, **$1,000,000.** DEVENCO, Inc., 150 Broadway, New York, N. Y., consult. engr. Bids in Nov. or Dec. CD 6/9.

▲ **Tex., Dallas**—PLANT—Ling-Altec Electronics Inc., 727 S. Central Expressway, Dallas, plant addn. and remodeling, **$1,000,000.**

▲ **Tex., Houston**—BREWERY—The Lucky Lager Brewing Co., 2601 Newhall Rd., San Francisco, Calif., plans by Anshen & Allen, 461 Bush St., San Francisco, Calif., brewery, **$7,775,000.** Bechtel Corp., 220 Bush St., San Francisco, Calif., consult. engrs. CD 12/31/56.

▲ **Va., Alexandria**—PLANT AND OFFICES—Aero Geo Astro Corp., Duke St., plant and offices, Edsall and Lincolnia Rds., **$1,250,000.** CD 6/6.

▲ **Wash., Kalama**—GRAIN ELEVATOR—Port of Kalama, 2 m. bu. export grain elevator, with dock and barge facilities, **$4,000,000.** North Pacific Grain Growers, Inc., Lessee. Marshall, Barr & Assocs., Lloyd Bldg., Seattle, engrs. CD 5/3.

▲ **Wis., Green Bay**—PULLIAM POWER PLANT ADDN.—Wisconsin Public Service Corp., 600 N. Adams St., Milwaukee, Pulliam Power Plant addn., **$20,000,000.**

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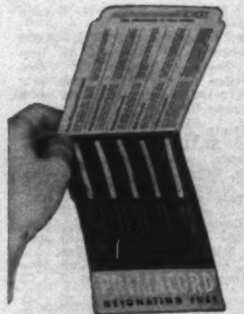

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Connecticut**—CONVERSION—BA 7/7—U. S. Eng., 187 Westminster St., Providence, R. I., conversion to Hercules, Nike Battery, 48 Hartford Defense Area, Cromwell and Middletown, $200,000. Plans deposit $10.

† **Mass., Watertown**—REPAIRS TO STEAM DISTRIB. SYS.—BA On Or About 7/14—U. S. Eng., 187 Westminster St., Providence, R. I., repairs to steam distribution sys. Bldgs. 60 to 292, Watertown Arsenal, ENG-19-016-60-86. $25,000-$50,000. Plans deposit $2.

BUILDINGS—BA

† **Massachusetts**—CONVERSION TO HERCULES, NIKE BATTERY 05—BA On Or About 7/14—U. S. Eng., 187 Westminster St., Providence, R. I., conversion to Hercules, Nike Battery 05, Launcher Area east of US Hy. 1, warheading bldg., canine kennel area, sentry control station, etc., Boston Defense Area, Danvers, Topsfield, ENG-19-016-60-87. $100,000-$200,000. Plans deposit $10.

HEAVY CONSTRUCTION—LB & CA

▲ **CONNECTICUT**—State Hy. Comn., 170 Douglas St., Hartford, Bids opened 6/13,

Conn.—**Brunalli Constr. Co., Inc.**, 109 Summer St., Southington, Conn., LB **$888,902** (4 bidders), Proj. 87-79, hot asph. concrete pavement relocating Rte. 63, two bridges, 3,588 lin. ft. FAI Proj. US 29(2), Naugatuck Co.;

Conn.—**Charter Oak Constr. Co., Inc.**, 525 Main St., Hartford, Conn., LB **$108,426** (4 bidders), Proj. 324-14 sight line imprvts., connector westbound roadway Rte. US 1A, and Connecticut Turnpike 783 lin. ft., c. conc. pavement 2,107 ft. merging area of westbound lanes, East Lyme and Waterford;

Conn.—**Macari Bros.**, 85 Pierson Lane, Windsor, Conn., LB **$116,093** (4 bidders), Proj. 59-84, drainage 758 lin. ft. Rtes. US 1 and US 1A, Turneys Creek, Fairfield;

Conn.—**Anderson Constr. Corp.**, P.O. Box 397, Southbury, Conn., LB **$118,309** (3 bidders), Proj. 87-83 bit. conc. pavement 2,668 lin. ft. Meadow St., relocating Rte. 63, FAI Proj. S 29(3), Naugatuck. CD 6/1.

BUILDINGS—LB & CA

Main Line Homes, Rte. 114, Middleton, Mass., Owner Builds, **$402,000**. RESIDENTIAL DEVELOPMENT, Rte. 101 near N. H. Turnpike, EXETER, N. H.

Realty Constr. Engineering Co., Inc., 303 Salem St., Reading, Mass., CA Est. **$405,000**, 15 HOUSES, Ridge View Park, Ridge St., ARLINGTON, MASS. Owner, c/o Robert Stone Co., Inc., 67 W. Foster St., Melrose, Mass.

A. S. Aloe Co., 408 South Huntington Ave., Jamaica Plain, Mass., Separate Contracts, **$300,000**, MANUFACTURING PLANT for Hospital Supplies, Charles River Park, BRIGHTON, MASS. Cunningham & Limp Co., 5835 W North St., Chicago, Ill., archt. CD 5/5.

▲ **Olsen & Appleby, Inc.**, 222 Union St., New Bedford, Mass., CA **$2,020,436**, est. $2,000,000, REGIONAL HIGH SCHOOL, Center and Mt. Prospect Sts., BRIDGEWATER, MASS. Bridgewater-Raynham Regional School Dist., Town Hall, Bridgewater, Mass. Bids May 14. CD 5/19, under LB.

Robert M. Hicks, Old Westford Rd., Chelmsford, Mass., Owner Builds, Approx. **$414,000**, 20 HOUSES, Gristone Road Homes, off Old Westford Rd., CHELMSFORD, MASS.

Owner, c/o James G. Mullen, 1355 Canton Ave., Milton, Mass., Owner Builds, Approx. **$400,000**, RESIDENTIAL DEVELOPMENT, off Cushing Dr., MILTON, MASS.

Owner, c/o Hillview Realty Co., 237 Main St., North Reading, Mass., Owner Builds, Approx. **$418,000**, 20 HOUSES, Stewart Manor, Park St., NORTH READING, MASS.

Owner, c/o Countryside Homes, Inc., Rte. 1, Norwood, Mass., Owner Builds, Approx. **$400,000**, 17 HOUSES, Rustic Acres, Walpole St., NORWOOD, MASS.

Fusco-Amatruda Co., 59 Amity Rd., New Haven, Conn., CA **$800,000**, 100-unit GARDEN APARTMENT, West Spring St., WEST HAVEN, CONN. University Towers, Inc., 270 Park Ave., New York, N. Y. Awarded June 13. CD 11/5.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **New York and Pennsylvania**—AIRPORT SURVEILLANCE RADAR FACILITY—BA 6/27—Federal Aviation Agency, International Airport, Jamaica, N. Y., airport surveillance radar facility (ASR) Sch. 1, Binghamton, N. Y.; Sched. II, Pittsburgh, Pa.

† **New York and New Jersey**—BA 6/29—U. S. Eng., 111 E. 16th St., New York 3, dredging, rock removal, Section 5, New York and New Jersey Channels (Arthur Kill) vicinity of Baltimore and Ohio RR Bridge 11.5 mi. SW of Battery, Richmond Boro. CIVENG 30-075-60-61. $300,000. Plans deposit $1. CD 3/18 under LB.

Pa., Phila.—BA 6/30—City Dpt. Procurement, City Hall Annex, Bid 2584, watermains 17 St. from Packer Ave. to Geary St. and other locations; Bid 2585, watermains Howell St., Elmhurst St. and Rising Sun Ave. CD 11/8/58.

† **N. Y., Romulus**—MISCELLANEOUS FACILITIES—BA 7/7—U. S. Eng., 111 East 16th St., New York, Zone 3, North Depot Activity (FY 60 Program) consisting heated insulated metal 40x62 ft. loading dock, two metal canopies, masonry warehouses, Seneca Ordnance Depot, ENG-30-075-60-144. $100,000. Plans deposit $5.

BUILDINGS—BA

N. J., Westville—PLANT, etc.—BA 6/28—Martin Guttman, archt., 709 Market St., Camden, 1 story 150x 250 ft. masonry, steel plant and offices, for Alpha Properties Inc., Westville, N. J. over $300,000. CD 5/27.

N. Y., Brookhaven—SCHOOL—BA 6/30—Bd. Educ. Union Free School Dist. No. 1, Brookhaven, elementary school, Stony Brook. $550,000. Plans deposit $50 general, $25 mechanical trades. Frederic P. Wiedersum Assoc., 65 Roosevelt Ave., Valley Stream, N. Y., archts.

Pa., Danville—HOME FOR AGED ADDN.—BA 6/30—Henry D. Dagit & Sons, archts., 1329 Race St., Phila., Pa. home for aged addn., for Villa Sacred Heart, Danville, Pa., $800,000. Plans deposit $60.

▲ **N. Y., Valley Stream**—SCHOOL—BA 6/30—Bd. Educ. Central High School Dist. No. 1, Town of Hempstead, Fletcher Ave., Central high school addns., $1,800,000. Frederic P. Wiedersum Assoc., 65 Roosevelt Ave., Valley Stream, N. Y., archts. CD 11/23/59.

Pa., Willow Grove—WAREHOUSE, etc.—Bids Asked—Stonorov & Haws, archts., 117 S. 17 St., Phila., Pa. warehouse and office, for H. M. Hillman Brass & Copper, 125 Market St., Phila., Pa., over $110,000.

HEAVY CONSTRUCTION—LB & CA

▲ **Sun Shipbuilding & Dry Dock Co.** foot of Morton Ave., Chester, Pa., LB **$5,622,810** (5 bidders) Narrows Bridge Contr. NB-4, furnishing, del. metalwork for cable anchorages incl. cable anchor bars, structural framing and cable saddle castings, NEW YORK. Triborough Bridge & Tunnel Auth., Administration Bldg., Randall's Island, New York 36, N. Y. Bids June 15 CD 5/11.

The Callanan Road Improvement Co., Quarry South St., South Bethlehem, N. Y., LB **$539,906** (2 bidders) apron and taxiways, Albany Airport, ALBANY, N. Y. City Bd. of Contract & Supply, Albany Municipal Airport, Albany 1, N. Y. CD 3/28/58.

▲ **Rand Constr. Co., Inc.**, 384 Park Ave. S., New York 10, N. Y., CA **$1,334,500**, Pier 7, bldg. finishes, Brooklyn-Port Authority Piers. Contr. BP 180.002, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids June 7. CD 6/9, under LB.

Kayfield Constr. Corp., 130 Cutter Mill Rd., Great Neck, N. Y., CA **$808,000** Pier 6, bldg. Brooklyn Port Authority Piers, Contr. BP-190.003, BROOKLYN, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids May 24. CD 5/27, under LB.

Buffalo Asphalt & Constr. Co., 237 Kensington, Buffalo, N. Y., LB **$168,472** paving Group 100 and wid'n. Goethe St., BUFFALO, N. Y. City, City Hall, Buffalo 2, N. Y. Bids June 2. CD 12/19/56;
Hahn & Kramer, 1375 William, Buffalo, N. Y., LB **$154,499**, paving groups 99 and 101 (Buffalo, N. Y.).

Zara Contracting Co., Inc., Engel St., Hicksville, N. Y., LB **$241,585** (6 bidders) resurf. Part II, Sections 6 & 7 LEVITTOWN, N. Y. Town of Hempstead, 350 Front St., Hempstead, N. Y. Bids June 15 CD 6/8.

Arthur R. Henry, Inc., Wabash Ave., Northfield, N. J., LB **$61,570**, timber groins, Barnegat, Proj. 631, NEW JERSEY, State Dpt. Conservation & Economic Development, 137 E. State St., Trenton, N. J.

Jesse A. Howland & Son, 50 Church St., Sea Bright, N. J., LB **$114,265**, timber groins, Beach Haven, Proj. No. 632, (New Jersey).

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 6/8,

The Warren Paving Co., Inc., Stewartsville, N. J., LB **$216,598** (1 bidder), reconstr. 4.5 mi. Phillipsburg-Belvidere Rd., White and Harmony Twps., Warren Co. CD 5/20.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 6/9,

The Mal-Bros Contracting Co., Little Falls, N. J., LB **$1,575,979** (13 bidders), 2 overpass bridges and relocation of Flat Rock Brook, Rte. 95, section of Bergen-Passaic Expressway, Englewood and Leonia, Bergen Co. CD 5/23.

Mele Salvatore, 10 Kingston Pl., Orange, N. J. LB **$209,300**. storm sewers along Scoles Ave. CLIFTON, N. J., Ci[illegible] City Hall, Clifton, N. J. CD 7/21/59.

† **Foster-Newman Constr. Co., Inc.**, 3622 13 Ave., Brooklyn 18, N. Y., LB **$943,400**, (10 bidders), 1 story, approx. 65 x 143 ft. ASW bldg., 37 x 49 ft. guard house, two 60 ft. high sentry towers, security fencing, 1,500 KVA primary substation, 8,320 v. dist. sys. on poles, water storage tank, 300,000 gal. cap., pump house 12 in. fire protection main extensions, road paving, parking areas and sidewalks, NBy 26870, Spec. 26870/60, EARLE, N. J., Dist. P. Wks. Office, Rm. 633, Federal Office Bldg., 90 Church St., New York 7, N. Y., Bids June 14. CD 6/10.

Frank Stamato Co., 284 Main St., Lodi, N. J., CA **$647,613**, (13 bidders), sewer, Hillcrest section, PATERSON, N. J., City, City Hall, Paterson, N. J., Bids May 24. CD 6/6 under LB.

† **Hess Bros., Inc.**, Deerfield Rd., Parlin, N. J., LB **$112,048**, apron access road, McGuire Air Force Base, ENG-36-109-60-31, WRIGHTSTOWN, N. J., U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., Bids June 8. CD 5/31.

PENNSYLVANIA—State Hy. Dpt., 506 North Office Bldg., Harrisburg, Bids opened 6/10.

Pa.—**The Interstate Amiesite Corp.**, Concordville, Pa., LB **$185,386**, (2 bidders), bit. resurf., variable in width 32,242 ft. T. R. 15-14, Gregg, Brady, Clinton, Delaware, Lewis and Muncy Creek Twps., Union, Lycoming and Northumberland Counties.

Pa.—**Wright Giffin**, Leraysville, Pa., LB **$172,245**, (12 bidders), bit. surf. 20 ft. wide and alt superstructure bridge 1,162 ft. course aggr. base, T. R. 106, Wyalusing Twp., Bradford Co.

Pa.—**Midland Contractors, Inc.**, Bellefont, Pa., LB **$195,550**, (11 bidders), bit. surf. 18 ft. wide course aggr. base 13,804 ft. T. R. 95, Miles Twp., Centre Co.

Pa.—**E. F. Mengel & Sons**, Rochester, Pa., LB **$206,324**, (3 bidders), bit. surf. variable in width 34,026 ft. T. R. 219-155-949, Bradford, Lewis Run, Port Allegheny, Kane, Johnsonburg and Ridgway Boros, Bradford, Lafayette, Wetmore, and Ridgway Twps., Elk and McKean Counties. CD 5/20.

▲ **Elmhurst Contracting Co., Inc.**, 53-09 97 Place, Corona, N. Y., CA **$1,473,593**, (13 bidders), Unit No. 1 local flood control protection works along Brodhead and McMichaels Creeks, Stroudsburg and E. Stroudsburg Boros, Stroud Twp., Monroe Co., PENNSYLVANIA, Dpt. Forest & Waters, 512 Education Bldg., Harrisburg, Pa., Bids May 13. Awarded June 2. CD 5/18 under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,

G. A. and F. C. Wagman, Inc., 370 E. Main St., Dallastown, Pa., CA **$4,076,571**, 17,376 ft., 4-lane rein.-conc. divided hy., 6 bridges Sec. 1A, L. R. 793, Proj. 729-1, City of Reading, Cumru and Exeter Twps., Berks Co., Bids May 12. Awarded June 7. CD 5/17 under LB.

General Asphalt Paving Co., 6851 Rising Sun Ave., Phila., Pa., CA **$110,315**, Bids 2546-47, water mains, PHILA., PA., Procurement Dpt., City Hall Annex, Phila., Pa., Bids May 24. Samuel S. Baxter, c/o owner, water comm., CD 5/10.

Eastern Asphalt Co., No. 2 Penn Center, Phila., Pa., CA **$308,631**, Bid 3752, paving; Bids 3755-58, PHILA., PA., Procurement Dpt., City Hall Annex, Phila. Grand total $1,362,652. Pa., CD 5/24.

James D. Morrisey, Inc., 9119 Frankford Ave., Phila., Pa., CA **$117,111**, Bid 3753, paving, (Phila., Pa.).

Union Paving Co., Wynnewood, Pa., LB **$180,517**, Bid 3768, paving, (Phila., Pa.).

Kelly Paving & Constr. Co., 1347 E. High St., Phila., Pa., LB **$319,484**, Bid 3761, paving, (Phila., Pa.).

General Asphalt Paving Co., 6851 Rising Sun Ave., Phila., Pa., LB **$334,159**, Bid 3760, paving, (Phila., Pa.).

Union Paving Co., Wynnewood, Pa., LB **$158,471** streets and paving, UPPER DARBY, PA. Upper Darby Twp. Comrs., Municipal Bldg., Upper Darby, Pa.

Eastern States Constr. Co., P. O. Box 2653, Union St. Station, Wilmington, Del., LB **$292,121**, water sys. imprvts., Contr. No. 1, WEST CHESTER, PA., West Chester, Borough Council, West Chester, Pa. Bids June 8. CD 5/19;
Charles F. Smith & Son, Inc., Kennett Square, Pa., LB **$92,277**, water sys. imprvts., Contr. 2, (West Chester, Pa.).

MARYLAND—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, Bids opened 6/7,

Frederick Asphalt Products, Frederick, Md., LB **$250,951** (6 bidders) b. conc. surf. 6.7 mi. US 40 from Rte. 453 to west of Sideling Hill Creek Bridge, W-489-620 and A-486-620, Washington and Allegany Counties. CD 5/31.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3,

Barnhill Contracting Co., Tarboro, N. C., CA **$1,444,029** grading, drainage relocated Rte. 4, 3.483 mi. from Ritchie Rd. to Hills Bridge Interchange incl. 3 dual 24.5 ft span prestressed concrete beam bridges near Washington. P. 735-13-320, Prince George Co. Bids Apr. 19. CD 4/22 under LB.

▲ **Trinity Bldg. & Constr. Co.**, 4420 E. Eager St., Baltimore, Md., LB **$1,113,730** (6 bidders) Hy. Contr. 1576, drainage, paving Northern Parkway Highgate Dr. to Jones Falls Expressway, BALTIMORE, MD. City, Bureau of Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids June 8. CD 5/31.

Diamond Constr. Co., Ocean Steamship Terminal, Savannah, Ga., LB **$318,562** Contr. MPA-E60-2 (A) abutment, fender racks, dolphins and lay slip, Port Covington, BALTIMORE, MD. Maryland Port Auth., Pier 2, Pratt St., Baltimore, Md. Bids June 7. CD 5/24,
Empire Constr. Co., 31 S. Calvert St., Baltimore 2, Md., LB **$489,650** (D) complete project No. 4, Port Covington (Baltimore, Md.).

† **Joseph F. Nebel Co.**, 3408 Wisconsin Ave. N. W., Wash., D. C., LB **$996,300** (19 bidders) arresting gear test facility, U. S. Naval Station, PATUXENT RIVER, MD. Area P. Wks. Officer, Chesapeake, U. S. Naval Weapons Plant, Wash. 25, D. C. Bids June 15. CD 6/6.

Intercounty Constr. Corp., 4720 Baltimore Ave., Hyattsville, Md., CA **$971,870**, outfall sewer relief main sewerage pumping station to Poplar Point Pumping Station, Southeast relief water main, Anacostia River crossing, WASH., D. C. D. C. Govt., Dpt. Sanitary Engineering, 499 Pa. Ave. NW, Wash., D. C. Bids May 12. Awarded June 10. CD 5/19 under LB.

Square Constr. Co., E. Capitol St. and B St., SE, Wash., D. C., LB **$804,065** (7 bidders) Slash run relief sewers, New Hampshire Ave. and Eye St. NW between Washington Circle and 27th St., WASH., D. C. D. C. Govt., Dpt. Sanitary Engineering, 499 Pa. Ave. NW, Wash., D. C. Bids June 14. CD 6/1.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Philadelphia, Pa. LB **$14,182,188**, Est. $15,688,000 (10 bidders) 50,000 seat stadium, west end E. Capital St. Bridge, WASH., D. C. Procurement Officer, D. C. National Guard, Armory, 2001 E. Capitol St., Wash., D. C. Bids June 10. CD 6/6.

▲† **Sociedade de Emtreitadas e Trabalhos Hidraulicos**, Lda, Lisbon, Portugal and **Healy, Tibbits Constr. Co.**, 411 Brannan St., San Francisco, Calif., CA **$3,680,021** rubble mound breakwater. POL pier, fender sys., mooring dolphins POL piping facility, approach road causeway, POL submarine pipelines exten. and tanker moorings relocation, misc. facilities Lajes Field, ENG 30-347-60-27, AZORES. U. S. Eng., 346 Broadway, New York 13, N. Y. Bids June 1. CD 6/3 under LB.

† **C. A. Pitts, General Contractors Ltd.**, Rm. 127, Timmins Aviation Bldg., P. O. AMF, Dorvall, P. Q., Canada, LB **$428,086** (3 bidders) airfield facilities (Cy-60), incl. 1 story steel frame A/C weapons calibration, shelter; readiness crew addn., ground powered equip. shop-fuel dispensing sys., readiness hangar, etc. Goose Air Base, ENG-30-347-60-30, GOOSE BAY, LABRADOR. U.S. Eng., 346 Broadway, New York 13, N. Y. Bids June 9. CD 5/20.

† **Arnold M. Diamond, Inc.**, 115 Middle Neck Rd., Great Neck, N. Y., LB **$567,825** (5 bidders) runway approach lighting, laying about 83,000 ft. of cable, etc. Ernest Harmon Air Force Base, Stephenville. ENG-03-347-60-29, ST. JOHNS, NEWFOUNDLAND U.S. Eng., 346 Broadway, New York 13, N. Y. Bids June 9. CD 5/23.

BUILDINGS—LB & CA

Milau Assoc. Inc., 310 Northern Blvd., Great Neck, N. Y., LB **$750,000** MEAT PACKING PLANT, MASPETH, N. Y. Hebrew National Kosher Co., Inc., 184 S. Elliot PL., Brooklyn, N. Y.

T. G. K. Constr. Co., Inc., 55 W. 42nd St., New York 36, N. Y., CA **$500,000** St. Joseph's CONVENT and SCHOOL addn., GARDEN CITY, N. Y. Diocesan Bldg. Comn., 253 Sunrise Hy., Rockville Centre, N. Y. Bids May 24. CD 6/6 under LB.

▲ **Sachar Development Corp.**, 244 Madison Ave., New York 16, N. Y., Owner Builds over **$1,000,000**, 16 story, 135,000 sq. ft. 195 unit Douglas Manor House APARTMENT, 3671 Hudson Manor Terrace, Riverdale, NEW YORK, N. Y. S. J. Kessler & Sons, 598 Madison Ave., New York 22, N. Y., archts.

▲ **Liberty Constr. Co.**, 1 Campbell Rd., Short Hills, N. J., CA est. **$5,000,000**, two 15 story APARTMENTS, Glenwood Ave., BLOOMFIELD, N. J., Nicholas A. Angleton, c/o contractor, Azeglio Pancani, Jr., 11 Commerce St., Newark, N. J., archt.

Turner Constr. Co., 150 E. 42 St., New York 17, N. Y., CA **$700,000**, 2 story OFFICE AND TRAINING CENTER for computer engineers, Cherry Hill section, CAMDEN, N. J., The Radio Corp. of America, Front and Cooper Sts., Camden, N. J., Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., archt.

▲ **Richard Bellush**, Woodcrest Rd., Whippany, N. J., Owner Builds, **$1,000,000**, 37 HOUSES, Cherry Lane, MENDHAM, N. J.

▲ **Bethlehem Steel Co.**, 375 Park Ave., New York 22, N. Y., CA **$1,246,574** Contr. GWB 200.012, furnishing, erecting structural steel BUS STATION, George Washington Bridge, Fort Washington and Wadsworth Aves., NEW YORK, N. Y. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids May 24. CD 5/27 under LB.

Villa Contracting Co., Inc., 233 North Ave. W., Westfield, N. J., CA est. **$600,000**, 130 unit MOTEL, swimming pool, Central Ave., and Garden State Parkway Circle, CLARK, N. J., Howard Johnson's 630 5 Ave., New York 20, N. Y., S. Lawrence Klein, 17 Academy St., Newark, N. J., archt.

▲ **Lawrence Constr. Co.**, Highway 22, Springfield, N. J., Owner Builds, **$1,000,000**, 65,000 sq. ft. PLANT, Linden Ave., for Research Packaging, Inc., Lessee, JERSEY CITY, N. J., George Siegler, 901 Broad St., Newark, N. J., archt.

▲ **Cresco Builders, Inc.**, 6219 Crescent Blvd., Pennsauken, N. J., LB **$1,305,000**, est. $1,900,806, senior HIGH SCHOOL, MOORESTOWN, N. J., Bd. Educ., Moorestown, N. J., Bids May 26. CD 5/4.

▲ **Laurie Constr. Co.**, Milltown Rd., Springfield, N. J., Owner Builds, **$1,500,000**, 53 HOUSES, Milltown Rd., SPRINGFIELD, N. J., Rotwein & Blake, 1018 Stuyvesant Ave., Union, N. J., archts.

▲ **John McShain, Inc.**, 3501 Sinclair Lane, Baltimore, Md., CA **$3,735,000**, 1, 2 & 3 story Calverton JUNIOR HIGH SCHOOL, BALTIMORE, MD. City, Bureau of Bldg. & Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids June 1. CD 6/6 under LB.

▲† **Blake Constr. Co.**, 33 E. Street, S. W., Wash., LB **$5,638,000** (11 bidders) replacement of HOSPITAL FACILITIES, U. S. Naval Hospital, National Naval Medical Center. NBy-25008, BETHESDA, MD. Area P. Wks. Office, Chesapeake, U. S. Naval Weapons Plant, Wash. 25, D. C. Bids June 10. CD 5/2.

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CIRCLE 259 ON READER SERVICE CARD

Laessle Builders, Inc., 117 S. 17 St., Phila., Pa., LB **$505,900**, est. $617,180, elementary SCHOOL, S. Chester Ave., DELRAN, N. J., Delran Twp. Bd. Educ., Bridgeboro, N. J., Bids June 2. CD 5/19.

Amron Bldg. Corp., Cranbury, N. J., CA **$400,000**, RESIDENTIAL DEVELOPMENT, Allentown Rd., etc., HIGHTSTOWN, N. J., Olde Yorke Estates, Hightstown, N. J.

▲ **Fred L. Applegate**, 86 Vincent Ave., Trenton, N. J., Separate Contracts, **$2,250,000**, RESIDENTIAL DEVELOPMENT (150), Hughes Dr., etc., HAMILTON SQUARE, N. J.

James G. Nicholas, 24 Water St., Jersey City, N. J. Owner builds, **$500,000**. truck TERMINAL, Kellogg St., JERSEY CITY, N. J. R. C. Motor Lines, 400 DeLancy St., Newark, N. J., Lessee, Leroy A. Cowan, 28 Concourse E., Jersey City, archt.

Laurel In The Pines, Lake Dr., Lakewood, N. J., Separate contracts, **$750,000**. HOTEL, LAKEWOOD, N. J. Kelly & Gruzen, 60 Park Pl., Newark, N. J. archts.

Tumminelli Brothers, 215 Burns Ave., Lodi, N. J. Owner builds, **$450,000**. 20 HOUSES, St. Joseph's Blvd., LODI, N. J. John A. Sepede, Main St., Lodi, engr.

Portland Gardens Inc., Portland Ave., Fanwood, N. J. Owner builds, **$700,000**. 26 HOUSES, Jefferson Ave., METUCHEN, N. J. Erwin Gerber, 11 Commerce St., Newark, archt.

▲ **Adam T. Schildge**, Mountain Hill Rd., Middletown, N. J. Owner builds, **$1,500,000**. 75 HOUSES, Warrant St., MIDDLETOWN, N. J.

▲ **Howard A. Fox**, 812 Hamilton St., New Brunswick, N. J. Owner Builds, **$20,000,000**, 852 HOUSES, Easton Ave., Franklin Twp., NEW BRUNSWICK, N. J. Rotwein & Blake, 1018 Stuyvesant Ave., Union, N. J., archts., Wilson Asso., 46 Paterson St., New Brunswick, N. J., engr.

Russo Constr. Co., 969 Stuyvesant Ave., Union, N. J., Owner Builds, **$500,000**, 13 HOUSES, Pine Way, NEW PROVIDENCE, N. J., Stephen Potter, 410 Colonia Ave., Union, N. J., archt.

Union Carbide Corp., 30 East 42 St., New York, N. Y., Own Forces, **$926,000**, First unit, WAREHOUSE at packaging plant and terminal adjoining Lehigh Valley Railroad land on Staten Island sound, PERTH AMBOY, N. J. CD 1/25.

Ives Nedellec, 205 6 St., Saddle Brook, N. J., Owner builds, **$450,000**. 15 HOUSES, Colonial Ave., SADDLEBROOK, N. J.

Evergreen Estates, Concord Rd., Scotch Plains, N. J., Owner builds, **$750,000**. 35 HOMES, Wood Ave., SCOTCH PLAINS, N. J. Erwin Gerber, 11 Commerce St., Newark, archt.

Carter Road Corp., R. D., Princeton, N. J., CA est. **$500,000**, MOTEL, Rte. 22 and Adamsville Rd., Bridgewater Twp., SOMERVILLE, N. J. Lawrenceville Corp., c/o John Strasenburgh, archt., 2868 Main St., Lawrenceville, N. J. CD 2/10/59.

▲ **J. B. Construction Corp.**, 58 Piermont Rd., Creskill, N. J., Owner builds, **$1,750,000**. 52 HOUSES, Stonehurst, Columbus Dr., TEANECK, N. J. Harsen & Johns, 60 Westervelt Ave., Tenafly, archts.

Delaware Valley Engineering & Constr. Co., Ltd., Flemington, N. J., CA **$240,000**, MFG. PLANT, TRENTON, N. J. Goodall Rubber Co., Whitehead Rd., Trenton, N. J. CD 12/4.

Andalusia Concrete Products, Andalusia, Pa., Separate contracts **$110,000**. building material PLANT and offices, ANDALUSIA, PA.

▲ **F. K. Campion, Inc.**, Flourtown, Pa., LB **$1,089,000**, HIGH SCHOOL, BANGOR, PA. Bangor Area Joint School Auth., Bangor, Pa. Bids May 25. CD 5/11.

Lewis J. Piantone Jr., 4 and Green Sts., Bridgeport, Pa. Separate contracts, **$400,000**. RESIDENTIAL DEVELOPMENT Forrest St., BRIDGEPORT, PA. Henry Berg, 1411 Walnut St., Phila., archt.

Marian Corp., 4609 State Rd., Drexel Hill, Pa., Separate Contract, **$400,000**, RESIDENTIAL DEVELOPMENT, James Rd., etc., BROOMALL, PA.

▲ **Arters Brothers Inc.**, Baltimore Pike and Oriole Ave., Lima, Pa., Separate contracts, **$1,320,000**. RESIDENTIAL DEVELOPMENT, Aston Twp., Mount Ave., CHESTER, PA.

† **William Sterling & Co., Inc.**, N.E. 26 and South Sts., Phila., Pa., CA **$597,800**, medical REHABILITATION Bldg. 69 and frozen food refrigeration Bldg. 3, Veterans Administration Hospital, COATESVILLE, PA. Veterans Admin., Munitions Bldg., Wash., D. C. Bids June 7. CD 6/10, under LB.

▲ **S. H. Evert & Co.**, Bloomsburg, Pa., LB **$1,968,000** HOSPITAL ADDN., alterations, DANVILLE, PA. George F. Geisinger Memorial Hospital, Danville, Pa. Bids June 2. CD 5/18.

Westrum & Eichert, Fort Washington, Pa., Separate contracts, **$765,000**. RESIDENTIAL DEVELOPMENT, Welsh Rd., FORT WASHINGTON, PA.

Globe Contracting Co., c/o Robert V. Nicholetti, 1325 Walnut St., Phila., Pa., Separate Contract, **$400,000**, MOTEL, service station, KULPSVILLE, PA., Henry S. Berg, 1411 Walnut St., Phila., Pa., archt.

Arters Brothers Inc., Baltimore Pike and Oriole Ave., Lima, Pa., Separate contracts, **$400,000**. RESIDENTIAL DEVELOPMENT, Rose Tree Rd., LIMA, PA.

La Pera Constr. Co., 4159 Main St., Phila., Pa., CA **$150,000**, mfg. PLANT, PENNSAUKEN, PA. Mark Lee Realty Co., 413 Carpenter St., Phila., Pa.

John McShain Inc., 17 and Spring Garden Sts., Phila., Pa. CA **$400,000**. DORMITORY and study hall, Elkins Park, PHILA., PA. La Salle College, Elkins Park, Phila., Pa. CD 6/3.

Pinebrook Constr. Co., 820 Cottman Ave., Phila., Pa. Separate contracts, **$400,000**. RESIDENTIAL DEVELOPMENT, Bridle Rd., PHILA., PA.

Frank A. D'Lauro Co., 218 E. Willow Grove Ave., Phila., Pa., CA **$400,000**, SCHOOL, PHILA., PA. R. C. Church of St. Katherine of Sienna, 9700 Frankford Ave., Phila., Pa., Ricker & Axt, 6115 Hudson Ave., West New York, N. J., archts.

Armond Ceritano, 851 Grove Ave., Springfield, Pa., Separate Contract, **$400,000**, RESIDENTIAL DEVELOPMENT, Donna Ave., etc., RIDLEY PARK, PA., David Slott, 1416 Bywood Ave., Upper Darby, Pa., archt.

Stan C. Seeple, 809 N. 7 St., Sunburg, Pa., LB **$747,578**, general contract, two DORMITORIES, SELINSGROVE, PA. Susquehanna University, Selinsgrove, Pa. Bids June 9. CD 5/19.

Whalen Brothers, 613 E. Market St., Pottsville, Pa., CA **$134,900**. 1 story 180x335 ft. masonry, steel industrial PLANT, TAMAQUA, PA. Tamaqua Industrial Development, Enterprises, 129 W. Broad St., Tamaqua, Pa. Bids June 1. CD 5/26.

Reisinger Bros., East North St., Carlisle, Pa., CA **$1,742,399**, HIGH SCHOOL, WAYNESBORO, PA., Waynesboro Area School System Auth., Fairview Ave. Elementary Bldg., Waynesboro, Pa., Bids Mar. 24. CD 4/5 under LB.

▲ **R. S. Noonan Inc.**, 26 N. Duke St., York, Pa., CA **$1,839,496**, HOSPITAL, YORK, PA. West Side Osteopathic Hospital, 1253 W. Market St., York, Pa. CD 5/2, under LB.

▲ **Glassman Constr. Co.**, Old Georgetown Rd., Bethesda, Md., CA **$1,418,500**, West Rockville JUNIOR HIGH SCHOOL, ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Bids June 2. CD 6/6 under LB.

SOUTH

HEAVY CONSTRUCTION—BA

† **S. C., Charleston**—BA 6/27—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, replacement of water piping in Bldgs. 1158 and 1159, U. S. Naval Hospital, U. S. Naval Base, NBy-31333, Spec. 31333/60. Under $25,000. CD 9/17/51, under Public Buildings.

† **Florida**—BA 6/28—Highlands Soil Conservation Dist., Lake Placid, channel excavation, Fisheating Creek Marsh, Highlands Co.

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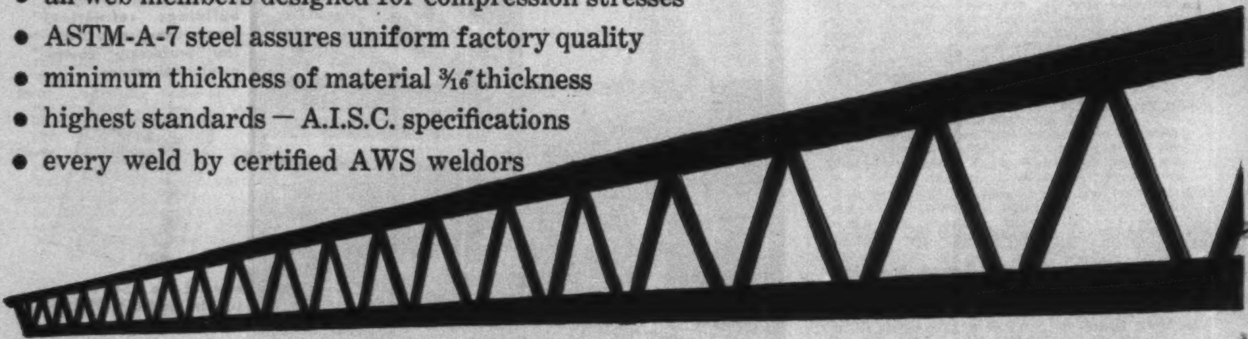

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BUILDINGS—BA

▲ **Ky., Bowling Green**—SCIENCE BLDG.—BA 6/30—Commonwealth of Ky., Div. of Purchases, Frankfort, 3 story, 75,000 sq. ft. brick, rein.-con. science bldg. Western State College. $1,200,000. Plans deposit $50. R. Ben Johnson, Deer Park Manor, Owensboro, Ky. and Frank D. Cain, 609 Cedar Ridge Rd., Bowling Green, Ky., archts. Engineering Services, Rte. 2, Hopkinsville, Ky., engrs. CD 2/19.

HEAVY CONSTRUCTION—LB & CA

Wiley N. Jackson Co., Rte. 4, Roanoke, Va., LB **$242,-071**, runway extension, Woodrum Airport, ROANOKE, VA. City, City Hall, Roanoke, Va. Bids Feb. 23. CD 2/18.

Mid-State Contractors, Inc., 1028 1st Ave. S.W., Hickory, N. C., LB **$67,065**, water supply lines, MARION, N. C. Town, Town Hall, Marion, N. C.

Bridges Constr. Co., P.O. Box 9, Heath Springs, S. C., LB **$233,834**, 182 mi. telephone lines, Anderson and Abbeville Counties, SOUTH CAROLINA. West Carolina Telephone Coop., Abbeville, S. C. Bids June 9. CD 5/27.

† **Allen-Sherman-Hoff Co.**, Wynnewood, Pa., LB **$267,156**, (4 bidders), ash and dust handling sys., Colbert Plant, ALABAMA. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. CD 1/23/59, under Public Buildings.

Patterson-Wilder Constr. Co., 2717 31 Ave. N., Birmingham, Ala., LB **$191,934**, water sys. extension in Whistler-Eight Mile area, PRICHARD, ALA. City, City Hall, Prichard, Ala. Bids May 10. (Correction—contractor's address). CD 6/2, under LB.

▲† **Ford Constr. Co.**, Dyersburg, Tenn., CA **$1,171,100**, Upper Bank paving at several locations on banks of Mississippi River between Miles 567 and 230 AHP, CIVENG-22-052-60-93, MISSISSIPPI. U. S. Eng., P.O. Box 60, Vicksburg, Miss. Bids May 3. CD 4/6.

LOUISIANA—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge,

L. H. Bossier, Inc., 907 4th St., Alexandria, La., CA **$888,924**, Lena Overpass-Monette Ferry Hy. Rte. 1, 5.535 mi., incl. grading, drainage, structures, c. conc. pavement SP Nos. 53-02-12 and 53-03-18, FASP 8, 34(3), Rapides and Natchitoches Parishes. Bids May 18. CD 5/24, under LB.

BUILDINGS—LB & CA

▲ **B. & B., Inc.**, 1010 Vermont Ave., Wash., D. C., CA **$2,700,000**, 150 HOUSES, north of here, SPRINGFIELD, VA. Edward R. Carr, Inc., 6458 Hibbing Ave., Springfield, Va. CD 11/17/59, under West Springfield, Va.

Doyle & Russell, Central National Bank Bldg., Richmond, Va., CA **$614,444**, NURSES' SCHOOL, RICHMOND, VA. Richmond Memorial Hospital, 1300 Westwood Ave., Richmond, Va. CD 6/3.

W. Harley Miller, Martinsburg, W. Va., LB **$711,000**, (6 bidders), DORMITORY, cafeteria, Shepherd College, SHEPHERDSTOWN, W. VA. Bd. Educ., Charleston, W. Va. Bids June 1. CD 5/3.

Frank J. Rooney, 712 S.E. 17th St., Fort Lauderdale, Fla., CA Est. over **$750,000**, 100 unit APARTMENT, swimming pool, FORT LAUDERDALE, FLA. Holiday Inn, 4400 Gage Lane, North Miami, Fla. George E. Waddey, 3345 N.E. 22nd St., Fort Lauderdale, Fla., archt.

T. W. Frierson, 919 5th Ave. S., Nashville, Tenn., CA Est. **$130,000**, MEAT PACKING PLANT addn., CLARKSVILLE, TENN. Tennessee Packers, Inc., Clarksville, Tenn.

John Martin Co., 610 W. Manning St., Chattanooga, Tenn., CA Est. **$450,000**, CHURCH and EDUCATIONAL, CHATTANOOGA, TENN. First Lutheran Church, Bailey Ave., Chattanooga, Tenn.

▲ **Cunningham-Limp Co.**, 3807 W. Grand Blvd., Detroit, Mich., CA Est. **$6,000,000**, 600,000 sq. ft. MANUFACTURING PLANT, MURFREESBORO, TENN. Shwayder Bros., Inc., 4270 High St., Ecorse, Mich.

▲† **Kaminer Constr. Corp.**, Chamblee, Ga., CA **$2,649,-200**, HIGH RADIATION LEVEL EXAMINATION LABORATORY, Bldg. 3525, Oak Ridge National Laboratory Area, Roane Co. Inv. No. 401-60-15A, OAK RIDGE, TENN. Atomic Energy Comn., P.O. Box E, Oak Ridge, Tenn. Bids May 26. CD 4/29.

MIDDLE WEST

BUILDINGS—BA

O., Youngstown—SCHOOL—BA 7/1—Bd. Educ., 20 W. Wood St., Mary Haddow grade school, Oak St. Plans deposit $30. Myron N. Goodwin, 19 Lincoln Ave., archt. CD 1/14.

O., Sandusky—MESS HALL AND KITCHENS—BA 7/6—State Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, mess hall, kitchen alterations, addns., Ohio Soldiers & Sailors Home. Plans deposit $15. R. M. Gerding & Assocs., 230 E. Market St., archts. Carl E. Bentz, state consult. engr. and archt. CD 8/10.

O., Toledo—SCHOOL—BA 7/7—Bd. Educ., Elm and Manhattan Sts., Avondale School, Avondale and Elizabeth Sts. Plans deposit $35. Hoffman, Troy & Ferguson, Spitzer Bldg., archt.-engrs. CD 11/9.

HEAVY CONSTRUCTION—LB & CA

INDIANA—State Hy. Dpt., State House Annex, Indianapolis,

Amick Constr. Co., Box 248, North Vernon, Ind., LB **$152,379** (4 bidders), Contr. M-4988, bit. surf. tr. 34.8 mi. Seymour District, Johnson, Owen and Jackson Counties. Bids June 7. CD 5/17.

INDIANA—State Hy. Dpt., State House Annex, Indianapolis, Bids opened 6/7,

Ind.—**J. L. Wilson**, Bloomfield, Ind., LB **$98,299**, est. $117,723 (10 bidders), Bridge Contr. 4899, Hendricks Co.; LB **$120,354**, est. $135,553 (6 bidders), Bridge Contr. 4937, Vigo Co.;

Ind.—**Tousley Constr. Co., Inc.**, 925 E. St. Clair, Indianapolis, Ind., LB **$584,872**, est. $676,732 (10 bidders), Bridge Contr. 4835, Marion Co.;

Ind.—**Rieth-Riley Constr. Co., Inc.**, 2500 Fieldhouse Ave., Goshen, Ind., LB **$128,826** (2 bidders), Bridge Contr. 4938, Lagrange Co. CD 5/18.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis, Bids opened 6/7,

Ind.—**Calumet Paving Co., Inc.**, Zionsville, Ind., LB **$1,051,611**, est. $1,259,000, (7 bidders), rein-conc. pavement, Contr. R-4979, Marion Co.

Ind.—**Rieth-Riley Constr. Co.**, 2500 W. Fieldhouse Ave., Goshen, Ind., LB **$1,126,912**, est. $1,273,461, (9 bidders), rein.-con. pavement, bit. pavement, Contr. R-4981, Vermillion and Warren Counties.

Ind.—**Bituminous Materials Co., Inc.**, 3500 N. 33 Rd., Terre Haute, Ind., LB **$218,611**, est. $263,758, (9 bidders), bit. resurf., Contr. RS-4890, Parke Co.

Ind.—**Olinger Constr. Co.**, Huntingburg, Ind., LB **$952,-201**, est. $1,247,058, (12 bidders), grading and drainage, Contr. R-4980, Hendricks Co.

Ind.—**Seneca Petroleum Co.**, 3258 S. Canal St., Chicago, Ill., LB **$229,893**, est. $237,002, (3 bidders), bit. base widn. and resurf., Contr. RS-4983, LaPorte Co.

Ind.—**L. P. Cavett Co.**, 511 Shepherd, Lockland, O., LB **$174,915**, est. $244,298, (7 bidders), bit. base widn. and resurf., Contr. RS-4984, Jackson Co.

Ind.—**McMahan Constr. Co.**, Rochester, Ind., LB **$577,-057**, est. $752,118, (8 bidders), bit. pavement with concrete base, Contr. RS-4985, Carroll and Cass Counties.

Ind.—**Vogel Constr. Co.**, 3760 E. St. Clair St., Indianapolis, Ind., LB **$195,925**, est. $203,943, (5 bidders), bit. base widn. and resurf., Contr. RS-4986, Marion Co. CD 5/12.

Exterior Contracting Co., Monticello, Ind., CA **$86,000**, 50 x 165 ft. swimming pool, 1 mi. north of here, ZIONSVILLE, IND., Azionaqua Swimming Club, Zionsville Ind., CD 5/1/58.

† **Base Procurement Office**, Bunker Hill Air Force Base, Peru, Ind., rejected bids May 16, Representative Weather Observation Station, Bunker Hill Air Force Base, IFB 12-617-60-59B, PERU, IND. CD 5/5.

† **Base Procurement Office**, Bldg. 3313, Truax Field, Wis., rejected bids May 18, relocating, repairing and modifying base nursery, Bldg. 2511, Truax Field, IFB 47-602-60-37, Proj. No. W.O. 412-60 (Base), MADISON, WIS. CD 4/29.

E. J. Albrecht Co., 2626 W. 26th St., Chicago, Ill., LB **$771,201**, Calumet Sag Channel Subcontract No. 5, for Chicago, Rock Island and Pacific R. R. Co.

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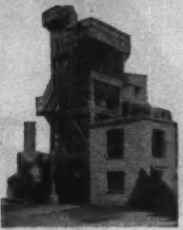

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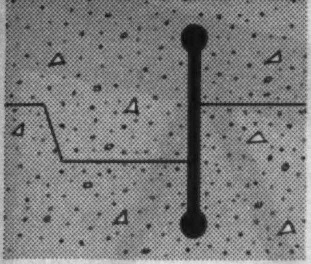

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CIRCLE 51 ON READER SERVICE CARD

portion of track grading, west of Western Ave. and south of 135th St. and certain portions of work on substructures, superstructures of Chicago, Rock Island and Pacific R. R. Co. approach bridges Nos. 161, 163, 164 and 168, constr. some short sections of channel wall near Bridge No. 167A in connection with Calumet Sag Proj., Blue Island, ILLINOIS. The Chicago, Rock Island & Pacific R.R. Co., W. B. Throckmorton, ch. engr., Rm. 403, LaSalle Station, 139 W. Van Buren St., Chicago 5, Ill. Bids June 1. CD 5/12.

ILLINOIS—Dpt. P. Wks. & Bldg., Div. Hys., Centennial Bldg., Springfield, rejected bids opened May 27, wid'n. 2 bridges US 30, south of Nelson, Lee Co., LB $124,278. CD 6/3, under LB.

Illinois-Power Co., 135 N. Main St., Decatur, Ill. Own forces **$100,000**, installing 14 in. natural gas line from Belleville distribution center to O'Fallon and branch to Caseyville ILLINOIS CD 3/12/57.

† **Powers Thompson Constr. Co.**, 27 S. Chicago St., Joliet, Ill., LB **$81,628** est. $100,000 (6 bidders) concrete filled sheet piling, pier repairs, Brandon Rd. Lock and Dam, Eng. 11-032-60-27, Joliet, ILLINOIS U. S. Eng., 536 S. Clark St., Chicago 5, Ill. Bids June 1 CD 5/16.

▲ **J. P. Constr. Co.**, 1750 State St., Chicago Heights, Ill. CA **$1,269,687**, No. 062-0205-CF, widen, resurf. Chicago road Thornton, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. Bids May 3. Awarded June 7. CD 5/9, under LB.

▲ **Anthony Pontarelli & Sons Inc.**, 9350 W. Grand Ave., Franklin Park, Ill., CA **$1,231,151**, No. 80.82-60-26 combined sewers, Contract No. 2, Emerald-Normal Aves CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, 2, Ill. Bids Apr. 11. Awarded June 8. CD 4/18 under LB.

Consolidated Constr. Co., 221 N. LaSalle St., Chicago 1, Ill., LB **$349,622** (13 bidders) storm sewerage, Roosevelt Rd. pumping Station, No.80.68-60-5 CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids June 8 CD 5/19.

G. E. Tillman Co., Inc., 702 N. Locust St., Centralia, Ill., LB **$827,040**, sanitary sewers, Div. A and B, treatment plant, screening plant KANKAKEE, ILL. City, City Hall, Kankakee, Ill. Bids May 23. CD 4/22.

Liotz-O'Neil Bros., Grant Park, Ill. LB **$669,383**, Stone St. interceptor, North Side interceptor, River St. relief, branch interceptor sewers, Kankakee Ill.

Ready Paving & Constr. Co., 4911 S. Shields Ave., Chicago, Ill. CA **$108,937**, Spec. Assess. No. 67, road paving, OAK LAWN, ILL. Village, Village Hall, Oak Lawn, Ill.

General Paving Co., 10 John St., Champaign, Ill. CA **$160,871**, Proj. 95-cs, street paving, bit. surf., concrete base, curb and gutters, 25 street lights, URBANA, ILL. City, City Hall, Urbana, Ill. Bids May 27. CD 5/18.

▲† **Merritt-Chapman & Scott Corp.**, 10 S. LaSalle St., Chicago, Ill., LB **$4,160,790**, dredging head of Upper Detroit River, CIVENG 20-064-60-71, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids June 2. CD 5/17.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing, bids opened 6/8,

Mich.—**John Yerington Co.** Rte. 3, Box 34, Benton Harbor, Mich., LB **$88,217**, 1.4 mi. b. conc. surf. Main St. (US 12) from First St. to St. Joseph River in Benton Harbor, Berrien Co. CD 5/27,

Mich.—**Sargent Constr. Co.**, 2840 Bay Rd., Saginaw, Mich., LB **$442,012** wid'n existing roadway 11.7 mi. and b. conc. surf. on M-57 from Clio west to US 23 freeway and on M-15 from Davison north to county line, Genesee Co. CD 5/27.

Mich.—**Lake & Howell Constr. Co.**, Box 578, Whitmore Lake, Mich., LB **$288,033**, wid'n existing roadway and b. conc. surf. 5.1 mi. on M-15 south from Davison to Hadley Rd. and on M-21 in Flint and roadway imprvt. M-121 (Bristol Rd.) just east of Torrey Rd., Genesee Co. CD 5/27,

Mich.—**Ann Arbor Constr. Co.**, 221 Felch St., Ann Arbor, Mich., LB **$436,456** wid'n existing roadway and b. conc. surf. 14 mi. on US-112 east from Jonesville, Hillsdale Co.;

Mich.—**Ann Arbor Constr. Co.**, 221 Felch St., Ann Arbor, Mich. and **Lake & Howell Constr. Co.**, Box 578, Whitmore Lake, Mich., LB **$220,301** wid'n. existing roadway and b. conc. surf. 7.7 mi. on US 112 from Jonesville West to county line, Hillsdale Co. CD 5/27,

Mich.—**Cooke Contracting Co.**, 1116 Penobscot Blvd., Detroit 26, Mich., LB **$390,288** wid'n. existing roadway and b. conc. 8.8 mi. M-25 west from M-53 in Port Austin to Oak Beach Rd., Huron Co.,

Mich.—**Cross & White**, 3849 Three Mile Rd. N. E., Grand Rapids 5, Mich., LB **$283,222** 1.2 mi. of approaches to weight station, US-16 freeway Int. 96 about 1 mi. east of M-66 and 8 mi. west of Portland, Ionia Co.,

Mich.—**Detroit Asphalt Paving**, 12201 Beech Daly Rd., Detroit 39, Mich. and **Detroit Concrete Product Corp.**, 19209 W. Davison, Detroit 23, Mich. LB **$313,001** asphalt shoulder constr. 23.8 mi. on Brighton-Farmington freeway US 16 between Brighton and Farmington, Livingston and Oakland Counties, CD 6/3,

Mich.—**W. H. Knapp**, Box 593, Monroe, Mich., LB **$108,498** wid'n. about ½ mi. US 10BR (Saginaw St.) Midland Co. CD 5/19,

Mich.—**Globe Constr. Co.**, 312 Peck Bldg., Kalamazoo, Mich., LB **$91,830**, bit. aggreg. surf. 9.3 mi. at two locations 3 mi. on "Y" Ave. south of Fulton and 6.3 mi. on "O" Ave. north of Portage Center, Kalamazoo Co. CD 5/27.

MICHIGAN—State Hy. Dpt., 732 Mason Bldg., Lansing, bids opened 6/8, Mich.—**Owen-Ames-Kimball**, 38 Barl St. N. W., Grand Rapids, Mich., LB **$778,287** two structures to carry Hall St. over Grand Rapids Freeway (relocated US-131) New York Central and Pa. RR tracks, Kent Co. CD 5/27,

Mich.—**A. J. Williams Constr. Co.**, 1920 Cambridge, Berkley, Mich., LB **$232,241**, railroad grade sep. to carry Chesapeake & Ohio tracks over US-23 freeway about ⅓ mi. south of Brighton, Livingston Co. CD 5/27,

† **H. P. Reger Co.**, 1501 E. 72nd Pl., Chicago 19, Ill., LB **$685,225** est. under $650,000 central heating plant addn., Wurtsmith Air Force Base. ENG 20-064-60-40, OSCODA, MICH. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids June 9. CD 6/2.

BUILDINGS—LB & CA

▲ **Dover Constr. Co.**, 11900 Shaker St., Cleveland, O. Owner builds, **$2,000,000** 250 HOMES, Beech Crest Development, BRIMFIELD, O.

Children's Hospital, 561 S. 17th St., Columbus, O., rejected bids opened May 12, RESEARCH CENTER, $450,000, COLUMBUS, O. Dan Carmichael, 5 E. Long St., Columbus, O., archt. CD 4/28.

Cosmopolitan Housing Corp., 3896 Mahoning Ave., Youngstown, O., Owner builds **$750,000**, 50 HOMES, Long View Estates, Birch Hill Rd. just west of Highland Dr., MEDINA, O.

The MacDonald Constr. Co., 1310 S. Grand St., St. Louis, Mo., CA site preparation for tire PLANT, FORT WAYNE, IND. B. F. Goodrich Co., 500 S. Main St., Akron, O. CD 2/16.

Darin & Armstrong, Inc., 6155 S. Oak Park Ave., Chicago, Ill., CA **$951,000**, superstructure for auto body plant ADDN, 700 Chase Ave., GARY, IND. Budd Co., Charlevoix Ave., Detroit, Mich. CD 12/9/59.

Wm. M. Glaser Constr. Co., 1125 S. Madison St., Muncie, Ind., LB **$154,803**, 1 story, steel frame, 75 x 250 ft. PLANT ADDN, MUNCIE, IND. Maxon Premix Burner Co., 18 and Mulberry Sts., Muncie, Ind. Bids May 28. CD 5/17.

▲ **Walsh Bros.**, 3710 S. Western Ave., Chicago, Ill., CA **$1,300,000**, est. $1,200,000, 3 story, rein.-conc. frame and steel frame GIRL'S DORMITORY, VALPARAISO, IND., Valparaiso University, 651 College Ave., Valparaiso, Ind., Bids Apr. 27. Awarded May 16. CD 4/5.

† **U. S. Eng.**, 536 S. Clark St., Chicago 5, Ill., cancelled bids to have been opened June 23, ARMY RESERVE CENTER, Eng. 11-032-60-110, AURORA, ILL. CD 6/2.

▲ **Rowe Constr. Co.**, 1523 W. Market St., Bloomington, Ill., CA est. **$1,000,000**, 100 unit MOTEL, swimming pool, BLOOMINGTON, ILL. Holiday Inn, Rtes. 66 and 9, Bloomington, Ill.

Poirot Constr. Co., 2001 W. Pershing Rd., Chicago, Ill. CA **$400,000**, ART SCHOOL addn., CHICAGO, ILL. Art Institute, Michigan Ave. and Adams St., Chicago 3, Ill. Awarded June 8. CD 10/27.

Consolidated Constr. Co., 800 Marquette St., Bay City, Mich., CA **$848,609** JUNIOR-SENIOR HIGH SCHOOL, FREELAND, MICH. Freeland Community School, Freeland, Mich. Bids May 11. Awarded June 6. CD 4/27.

Hamann Constr. Co., 1672 Morrow St., Green Bay, Wis., CA Est. **$850,000**, 5 story OFFICE addn., APPLETON, WIS. Wisconsin Telephone Co., 740 N. Broadway, Milwaukee 2, Wis. Bids June 2. CD 5/25.

MISSISSIPPI TO ROCKIES

BUILDINGS—LB & CA

† **Kan., Fort Leavenworth**—MICROWAVE RADIO RECEIVER—BA 6/29—U.S. Eng., 1800 Federal Office Bldg., Kansas City, Mo., microwave radio receiver bldg. Midwest Relay Center. IFB 60-107. CD 9/5/58.

HEAVY CONSTRUCTION—LB & CA

† **G. H. Lindekugel & Sons, Inc.**, Mitchell, S. D., LB **$62,278** est. $70,647 (3 bidders) recreation facilities North Point Public Use Area and Pickstown St. surf., Ft. Randall Dam & Reservoir near Pickstown. CIVENG-25-066-60-97, SOUTH DAKOTA. U.S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids June 8. CD 5/25.

† **Peter Kiewit Sons' Co.**, Box 511, Rapid City, S. D., CA **$297,504**, off-site utilities, Title VIII Family Housing Project. Ellsworth Air Force Base, RAPID CITY, S. D. U.S. Eng., 1709 Jackson St., Omaha 2, Neb.

† **Bethlehem Foundry & Machine Co.**, 225 W. 2 St., Bethlehem, Pa., LB **$59,600**, 5x6 ft. and two 3 ft. x 6 in. high-pressure gate valves for outlet works at Red Willow dam, Missouri River Basin Proj., Frenchman-Cambridge division, DS-5326, NEBRASKA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids June 9. CD 5/3.

† **Markham & Brown Co.**, 1961 N. Industrial Blvd., Dallas, Tex., CA **$780,123**, repair dikes and revetments Missouri River, Omadi-Snyder Bends, near Salix, IOWA-NEBRASKA. U.S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 28. CD 5/4, under LB.

† **U. S. Eng.**, 1709 Jackson St., Omaha 2, Neb., cancelled bids to have been opened June 2, disposal area for L02 and LN2 Aux. sites, Offutt Air Force Base, ENG-25-066-60-150, FORT CROOK, NEB. CD 5/24.

BUILDINGS—LB & CA

▲† **U. S. Eng.**, P.O. Box 1538, Albuquerque, N. M., cancelled bids to have been opened about July 6, 510-units Capehart HOUSING, Fort Bliss, ENG-29-005-60-68, EL PASO, TEX. Est. **$8,000,000**. CD 6/9.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Wash., Tacoma**—HANGAR MAINTENANCE FIELD MODIFICATION—BA 7/5—Base Procurement Office, McChord Air Force Base, modifying hangar maintenance field No. 1 and 2, McChord Air Force Base, IFB 45-603-60-99. CD 9/9/58.

Calif., San Diego—PUBLIC WORKS YARD—BA 7/6—City, Purchasing Agent, Rm. 161, Civic Center, Zone 1, public works yard, Chollas Station. Plans deposit $10.

† **Mont., Glasgow**—AIR BASE IMPRVTS.—BA 7/6—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., routing, cleaning and sealing 18,200 ft. joints and cracks in b. concrete runway pavement, Glasgow Air Force Base, ENG-45-108-60-146. Plans deposit $1. CD 3/12/58.

▲ **CALIFORNIA** — BA 7/7 — State Div. Hys., 120 S. Spring St., Los Angeles,

Los Angeles Co.—7.4 mi. lane freeway, San Diego Freeway between 0.3 mi. south of Casinao Rd. and 0.3 mi. north of Valley Vista Blvd. Extended date. $14,221,500. CD 5/11.

Calif., Los Angeles—BA 7/8—Los Angeles County Flood Control Dist., Rm. 703, Hall of Records, Unit 1 of Whitwood Storm Drain from intersection Scott Ave. and Santa Fe St. NE upstream from Los Angeles and Salt Lake RR track. CD 11/10/58.

† **Calif., Point Mugu**—REVISE ELECTRICAL DIST. BLDG.—BA 7/21—Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego, Zone 1, revise electrical dist. bldg. No. 372, Naval Missile Center, Spec. 30333. $25,000-$100,000. CD 9/25/59.

BUILDINGS—BA

▲ **Calif., Stockton**—HIGH SCHOOL—BA 7/15—Stockton City Unified School Dist., 701 N. Madison, 80,000 sq. ft. wood frame, stucco Southeast junior high school. $1,326,000. Plans deposit $100. Mayo & de Wolf Assoc., 307 Exchange Bldg., 142 N. California, Stockton, Calif., archts. CD 11/17/59.

Calif., Stockton—SCHOOL—BA 7/15—Stockton City Unif. School, 701 N. Madison, wood frame, stucco Southeast elementary school. $413,800. Plans deposit $50. Ernst & Lloyd, 2132 North El Dorado, Stockton, Calif., archts. CD 3/28.

▲ **Calif., Northridge**—PHYSICAL EDUCATION, etc.—BA 7/20—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, physical education bldg., two swimming pools, San Fernando Valley State College. W.O. 4160GC and W.O. 4304GC-47. $3,000,000. CD 6/19/59.

▲ **Tex., Dallas**—BOWLING CENTER, etc.—Bids Asked—Curtis Sanford, 2411 Cedar Springs Rd., Dallas, bowling center, $3,300,000; swimming pool $100,000; golf course, $175,000; hard-paved area and auto center, $115,000. Jacob E. Anderson, 614 Thames Bldg., Dallas, archt. CD 12/15/59.

HEAVY CONSTRUCTION—LB & CA

▲ **ALASKA**—Dpt. P. Wks., Div. Hys., Juneau, bids opened 6/15.

Cole & Paddock, 1800 Glacier Ave., Juneau, Alaska, LB **$571,220**, (6 bidders), conversion of Million Dollar RR Bridge at Mile Forty Nine Cooper River High to Highway Bridge. CD 6/9.

▲ **IDAHO**—State Hy. Dpt., Boise.

Hoops Constr. Co., Twin Falls, Idaho, CA **$1,126,346** 4-lane divided hy., roadway, drainage structure, plant mix bit. surf. 212 ft. underpass and two 26 ft overpasses, two 30 ft. bridge, 4 machine passes 4.11 mi. Interstate 80 N, Payette and Canyon Counties Bids May 31. CD 6/7, under LB.

† **General Electric Co.**, P. O., Box 2331, Denver 1, Colo., CA **$209,120**, two 161-kv and six 69-kv power circuit breakers for Phoenix substation, Schedules 1 and 2, Parker-Davis Proj., DS-5308, ARIZONA, Bureau Reclamation, Dpt. Interior, Bldg. 1A Denver Federal Center, Denver, Colo., Bids May 17. CD 6/2 under LB.

† **Murphy Bros.**, E 3928 Broadway, Spokane, Wash., LB **$220,008** (13 bidders) grading, rock surf. 10.283 mi. Colville Indian Reservation, WASHINGTON Bureau Indian affairs, 1001 N. E. Lloyd Blvd., Portland, Ore. Bids June 8. CD 6/2.

† **George A. Grant**, Richland, Wash., LB **$72,626**, (4 bidders), furnishing and installing trash collecting facilities for Roza powerplant, Yakima Proj., DC-5335. WASHINGTON, Bureau Reclamation, Dpt. Interior, Yakima, Wash., Bids June 8. CD 5/10.

† **H. J. Kaiser Co.**, 1924 Broadway, Oakland, Calif., and **Raymond International Corp.**, Oakland, Calif., LB est. **$102,033**, (6 bidders), clearing, grubbing, grading, draining and surf. for relocation of U. S. F. S. Rd. No. 212 for Howard A. Hanson Dam, Green River, Kanasket, CIVENG-45-108-60-34, WASHINGTON, U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., Bids June 9. CD 5/12.

Packard Pipe & Pump Co., 554 15 Ave., Longview, Wash., LB **$131,948**, est. $158,000. raw-water intake structure and pumping station, LONGVIEW, WASH. City, City Hall, Longview, Wash. Bids June 9. CD 5/18.

Peter Kiewit Sons Co., 1300 Aloha St., Seattle, Wash., LB **$733,925**, est. $900,000, (8 bidders), clearing, grading, soil stabilization and rock surf. for 1,700 ft. runway extension at Seattle-Tacoma Airport, SEATTLE, WASH., Port of Seattle, Bell St. Terminal, Seattle 1, Wash., Bids June 14. CD 6/1.

Hanson Constr. Co., 928 N. 127 St., Seattle 33, Wash., LB **$387,523**, (4 bidders), 59,616 ft., 6-15 in. sanitary sewers, Contr. P, SEATTLE, WASH. Southwest Suburban Sewer Dist., 864 S.W. 136 St., Seattle, Wash. Bids June 8. CD 6/2.

▲ **Ostruske-Murphy, Inc.**, 1515 Center St., Tacoma, Wash., LB **$1,423,401**, est. $1,600,000, (9 bidders), subway to Lake St. under extension of runway at Seattle-Tacoma Airport, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle, Wash. Bids June 14. CD 5/26.

Butler Constr. & Eng. Co. 3419 13 Ave. S. W., Seattle, Wash., LB **$286,312** 32,634 ft. 6- to 15-in. sanitary sewers, Cntr R; **$126,350**, underground rein.-con. pumping station, SEATTLE, WASH. Southwest Suburban Sewer Dist., 864 S.W. 136 St., Seattle, Wash. Bids June 10. CD 6/2.

Hainsworth Constr. Co., 3028 Western Ave., Seattle 1, Wash., CA est. **$400,000**, rein.-conc. and frame WAREHOUSE, piling fdn., SEATTLE, WASH., Eyres Transfer & Warehouse Co., 2203 1 Ave. S., Seattle, Wash., S. W. Mar, Alaska Trade Bldg., Seattle 1, Wash., archt.

Standard Asphalt Paving Co., 119 N. Post St., Spokane, Wash., CA **$112,710** (7 bidders) surf. and sealcoating 15.65 mi. county roads, YAKIMA, WASH. Yakima Co. Court House, Yakima, Wash.

Continental Drilling Co., Walla Walla, Wash., LB **$118,362**, (3 bidders), churn drilling, Mossyrock Dam, TACOMA, WASH. City, City Hall, Tacoma, Wash. Bids June 6. CD 6/3.

† **Murphy Bros.**, P.O. Box 2195, Spokane, Wash., LB **$220,008**, (13 bidders), grading, draining, fencing and crushed rock surf. 10.283 mi. Silver Creek Rd. on Colville Indian Reservation, CIR 1(3), WILBUR, WASH. Bureau Indian Affairs, 1001 N.E. Lloyd Blvd., Portland, Ore. Bids June 8. CD 5/20.

OREGON—State Hy. Comn., Hy. Bldg., Salem, Bids opened 6/1,

Hamilton & Thomas, Inc., 115 11th Ave. E., Eugene, Ore., LB $115,260 (5 bidders), three bridges, Cottage Grove-Black Butte county road, Lane Co. CD 5/18.

† **A & B Constr. Co.**, 906 Flowerree St., Box 554, Helena, Mont., LB **$337,617**, est. $356,122, Schedule 1, LB **$277,694**, est. $323,292, Schedule 3, earthwork, structures, Diversion Canal and headworks, Crooked River Proj., DC5328, OREGON. Bureau Reclamation, Dpt. Interior, Prineville, Ore. Bids June 8. CD 5/5.

▲ **OREGON**—State Hy. Comn., Hy. Bldg., Salem, Bids opened 6/1,

Ore.—**Peter Kiewit Sons Co.**, 405 E. Main St., Medford, Ore., CA **$2,388,635** (5 bidders), stone base, paving, 4 structures, signing, 8.65 mi. Pacific Hy., Proj. FAIP I 5-1(22)50, Josephine and Jackson Counties;

Ore.—**Gibbons & Reed**, 6405 N.E. Glisan St., Portland, Ore., CA **$1,758,023** (7 bidders), grading, 3 bridges, power line relocation 4.73 mi. Columbia River Hy., Proj. FAIP I 80N 2(19)33, Multnomah Co.;

Ore.—**Durbin Bros.**, 4110 11th Ave. W., Eugene, Ore., CA **$442,463**, grading, oiling 4.5 mi. John Day Hy. Proj. FAP F 41(2), Wheeler Co.;

Ore.—**Vernie Jarl**, Gresham, Ore., CA **$113,086** (5 bidders), grading, oiling 3.99 mi. Woodell Lane Rd. Proj. FAP S 449(1), Union Co.;

Ore.—**Trowbridge Electric**, Roseburg, Ore., CA **$136,676** (5 bidders), illumination, traffic signal installations, Pacific Hy. Proj. FAIP I 5-4(35)193, Lane Co.;

Ore.—**John L. Jersey**, 3647 S.E. 34th Ave., Portland, Ore., CA **$253,510** (4 bidders), grading 2.37 mi. N.E. Glisan St. Proj. FAP S 297(4), Multnomah Co.;

Ore.—**Babler Bros.**, 4617 S.E. Milwaukie Ave., Portland, Ore., CA **$92,815** (3 bidders), oiling, 6 county roads, Deschutes Co.;

Ore.—**C. R. O'Neil**, Creswell, Ore., CA **$578,447** (13 bidders), grading, oiling, structure 5.46 mi. Lake of the Woods Hy., Proj. S 239(7), Jackson Co. Awarded June 2. Grand total $5,763,655. CD 5/18.

† **Hansen & Parr**, 315 W. Boone Ave., Spokane, Wash., LB **$131,787**, est. $109,778 (2 bidders) concrete bridge, Cougar Reservoir, CIVENG-35-026-60-189, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids June 1. CD 5/4.

† **Oregon**—Bureau P. Rds., Morgan Bldg., Portland,

E. C. Hall Co. and Fred H. Slate Co., 11655 SW Barbur Blvd., Portland, Ore., CA **$832,966**, reconstr. 2.774 mi. Crater Lake Hy., Jackson Co. Bids May 3. Awarded June 2. CD 5/12, under LB.

Viesko & Post, Box 69, Salem, Ore., LB **$776,263** (5 bidders) ARMORY AND AUDITORIUM, SALEM, ORE. Oregon National Guard, Salem, Ore. Bids June 7. CD 5/24.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles.

Daley Corp and R. M. Price Constr. Co., P. O. Box 4067, No. Park Station, San Diego, Calif., CA **$3,493,413** 4 level interchanges and 0.5 mi. 8 lane freeway on San Diego Freeway between Park Blvd. and 6th Ave. XI-S.D.-2,77 San Diego Co. Bids June 2 Awarded June 13 CD 6/8 under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, bids opened 6/15.

Charles L. Harney, Inc., 575 Berry St., San Francisco 7, Calif., LB **$1,794,835** (6 bidders) 1.6 mi. six lane freeway, US Hy. 40 incl. 3 bridges, wid'n one bridge between Chadbourne Rd. and 0.4 mi. east of Oliver Rd. X-SOL-7-B, Solano Co. CD 5/18.

† **Carroll Service, Inc.**, 718 W. Burnside St., Portland, Ore., LB **$456,654**, est. $583,895 (3 bidders) 100x130 ft. masonry steel armament bldg., 75x75 ft. steel, masonry aircraft weapons calibration bldg., utilities, Kingsley Field, Spec. 28273/59, KLAMATH FALLS, ORE. Bids June 7. CD 5/17.

† **Charles T. Parker**, Box 7588, Portland, Ore., LB **$545,065**, (5 bidders), Schedule III, 345 kv line No. 1, 22.3 mi. Big Eddy-McLaughlin section Big-Eddy Keeler, Inv. 9128, Hood River and Clackamas, OREGON. Bonneville Power Admin., 1001 N.E. Lloyd Blvd., Portland, Ore. Bids June 7. CD 5/12.

† **Miller & Hitchins**, 100 Grant Smith Rd., Roseburg, Ore., LB **$191,800**, est. $187,555, (5 bidders), upstream slope reinforcement, Hills Creek Dam, CIVENG-35-026-60-201, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids June 7. CD 5/24.

† **Hannan Bros.**, 8410 S.E. Otty Rd., Portland, Ore., LB **$295,364**, est. $404,814, (7 bidders), pumping station canal, Multnomah Co. Drainage Dist. No. 1, CIVENG-026-60-198, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids June 10. CD 6/6.

† **S. D. Spencer & Son**, 4614 NE 72nd Ave., Vancouver, Wash., LB **$159,710**, est. $188,005, (6 bidders), 127,-100 sq. yds. select fill, subgrade preparation, operational apron, Portland International Airport, ENG-45-108-60-123, PORTLAND, ORE. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids June 9. CD 5/4.

† **American Ligurian Co., Inc.**, 55 W. 42nd St., New York, N. Y., CA **$92,740**, Crooked River Proj., Schedule 1 and 2, seven motor-driven, horizontal, centrifugal-type pumping units for Barnes Butte pumping plant and Ochoco relift pumping plant, Spec. DS 5303 OREGON. Bureau Reclamation, Dpt. Interior, Prineville, Ore. Bids May 10. Awarded June 8. CD 4/13.

† **Pfeiffer & Pontius**, Othello, Wash., LB **$351,111** est. $385,541 (5 bidders) Crooked River Proj. Schedule 1-Ochoco relift pumping plant; Schedule 2-Barnes Butte Pumping Plant, discharge lines, Spec. DC 5330 OREGON. Bureau Reclamation, Dpt. Interior, Prineville, Ore. Bids June 9. CD 5/9.

† **OREGON**—Bureau P. Rds., Morgan Bldg., Portland rejected bids opened June 2, grading, 27.418 mi. timber access roads, Klamath and Jackson Counties, LB $442,476. CD 6/9/60.

Graff & James, Box 82, Medford, Ore., LB **$279,927** sewage treatment plant, ASHLAND, ORE. City, City Hall, Ashland, Ore. Bids June 7. CD 5/18.

L. F. Henshaw, 6650 Olive St., Eugene, Ore., LB **$138,-500** (3 bidders) spawning facility, access road, Carmen Smith Hydroelectric Proj., EUGENE, ORE. Eugene Water & Electric Bd., City Hall, Eugene, Ore. Bids June 8. CD 5/27;
C. Kenneth Dart, Eugene, Ore., LB **$95,443** (1 bidder) building, utilities, Carmen Smith Hydroelectric Proj. (Eugene, Ore.).

Port of Portland, Swan Island, Portland, Ore. cancelled bids to have been opened June 7, base operators facilities, grading, paving, Portland International Airport, PORTLAND, ORE. CD 5/18.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Dan Caputo and M.J.B. Constr. Co., P.O. Box 7, Stockton, Calif., CA **$1,553,700**, freeway interchanges, crossing structures and reconstr. 1.6 mi. roadway US 99 between 0.4 mi. north of Farmington Rd. and Calvareras River east of Stockton. S-X. J-4-E, C. San Joaquin Co. Bids May 25. CD 5/31, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Fredrickson & Watson Constr. Co., 873 81st Ave., Oakland, Calif., CA **$1,672,268** grading, paving 4.5 mi. 4 lane freeway on US Hy. 101 between 1.7 mi. south and 1.8 mi. north of Greenfield, incl. traffic separation bridges over freeway just north of Espinosa Rd. at Oak Ave. at Walnut Ave. and at Thorne Rd., Monterey Co. Bids May 18 Awarded June 9.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 6/9,
Oberg Constr. Corp., 19424 Plummer St., Northridge, Calif., LB **$159,983** (12 bidders) rein.-con. bridge over Santa Ana River and surf. roadway approaches FAS County Road 826 (Katella Ave.) 1.5 mi. northwest of Orange, VII-Ora-826, Orange Co. CD 5/12.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 6/9,
Webb & White, 512 So. San Vicente Blvd., Los Angeles Calif., LB **$476,329** (3 bidders) wid'n. from 6 to 8 lanes 1.1 mi. Santa Ana Freeway between Eastern Ave. and Atlantic Blvd., city of Commerce, pedestrian overcrossing, Arizona Ave. access ramps and merging lines. VII-L.A.-16-166, Cmrc, Los Angeles Co. CD 5/12.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Edward Keeble Constr. Co., Rte. 4, Box 64, San Jose, Calif.. CA **$1,189,788** grading, surf. 3 mi. 4 lane freeway on State Sign Rte. 17 between 0.6 mi. north of Granite Creek Rd. and 0.4 mi. south of Glen Canyon Rd. north of Santa Cruz, incl. one bridge and 2 traffic separation bridges, Santa Cruz Co. Bids May 25. Awarded June 9. CD 5/31, under LB.

▲† **Morrison-Knudsen & Mercer Fraser Co.**, 2nd and Commercial Sts., Eureka, Calif., LB **$1,568,563** (5 bidders) repairs to jetties, concrete cap and parapet walls. stone work, railroad steel rein.-structures, Humboldt Bay, Humboldt Co. CIVENG-04-203-60-23, CALIFORNIA. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 8. CD 5/11.

Kennedy Pipe & Supply Co., 15301 S. Paramount Blvd., Paramount, Calif., CA **$105,195**, install irrigation mains, El Dorado Park West, LONG BEACH, CALIF. City, 205 W. Broadway, Long Beach, Calif. Bids May 26.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
Slate-Hall-Hamilton Co. 7805 Southwest 40th St., Portland, Ore., CA **$7,469,832**, 5.9 mi. freeway Hy. 99 with frontage roads, 4 rein.-con. bridges and one welded steel girder bridge between 0.6 mi. north of Shotgun Creek and 1 mi. south of Castella. 11-SHA-3-D, Shasta Co. Bids June 1 CD 6/3 under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 6/8,
Calif.—**Granite Constr. Co.**, P.O. Box 900, Watsonville, Calif., LB **$862,248**, (7 bidders), grading, surf. to reconstr. and wid'n. 12.9 mi. State Sign Rte. 33 between 2 mi. north of Mountain View Ave. and State Sign Rte. 180 in Mendota, VI-Fre-138, D. Mda., Fresno Co.;
Calif.—**Arhtur B. Siri, Inc.**, 1357 Cleveland Ave., Santa Rosa, Calif., LB **$487,048**, (13 bidders), grading, surf. 4.2 mi. State Sign Rte. 53 between St. Helena Creek Bridge and Middletown, I-lak-49-a. Lake Co.;
Calif.—**Slinsen Constr. Co.**, 1558 W. Trancas Rd., Napa, Calif., LB **$343,934**, (6 bidders), interchange and frontage roads, State Sign Rte. 29 between Imola Ave. and 0.1 mi. north of Old Sonoma Rd., Napa, incl. 307 ft. bridge Old Sonoma Rd. over Highway, IV-Na-49-D, Napa Co.;
Calif.—**A. Teichert & Son, Inc.**, 1931 Stockton Blvd., Sacramento, Calif., LB **$389,242**, (10 bidders), reconstr., wid'n. FAS County Road 1293 (Jack Tone Rd.) between 7.3 mi. and 15.3 mi. south of Lockeford, incl. bridges over Mormon Slough, Potter Creek and Duck Creek, S.J.-X-1293, San Joaquin Co. CD 5/12.

Jess H. Harrison Co., P. O. Box 315, San Ardo, Calif., CA **$552,633** road constr., Big Oak Flat. Stanislaus National Forest. Proj. IFB R7-316, Tuolumne Co. Bids May 3 CD 5/10 under LB.

▲ **Peter Kiewit Sons Co. Inc.**, 345 Kieways Ave., Arcadia, Calif., CA **$4,963,142** (8 bidders) Weymouth Memorial Softening and Filtration Plant for Colorado River Aqueduct, LaVerne, LOS ANGELES, CALIF. Metropolitan Water Dist. of Southern Calif., 306 W. 3rd St., Los Angeles, Calif. Bids June 8. Awarded June 14. CD 6/10 under LB.

▲ **E. A. Irish**, 2944 Gleneden St., Los Angeles, Calif., CA **$1,248,606** est. $1,000,000 rein.-con. channel, Redondo Beach Blvd. to Compton Blvd., Wilmington, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids May 27 Awarded June 8 CD 6/2 under LB.

W. E. Robertson Co., 4015 W. Jefferson Blvd., Los Angeles, Calif., CA **$837,000**, 5 story 112x121 ft. stucco APARTMENT, 529 N. Rossmore Ave., LOS ANGELES, CALIF. W.R.M. Smith, 1166 E. 58th St., Los Angeles 11, Calif. Max Matlzman, 4015 W. Jefferson Blvd., Los Angeles 17, Calif., archt.

▲ **E. T. Haas Co.**, 407 Harbor Blvd., Belmont, Calif., CA **$1,241,580**, clay pipe sewer, clay pipe sewer lateral, c.i. pipe, force main, manholes, 4 pumping stations, etc. Linda County Water Dist., MARYSVILLE, CALIF. Linda County Water Dist., Hy. 99 East, Marysville, Calif. Bids June 6. CD 6/13 under LB.

▲ **R. V. Lloyd**, Box 128, Coachella, Calif., CA **$1,861,-229** (10 bidders) 105,048 ft. 12 to 54 in. main pipeline distrib. sys., OXNARD, CALIF. Pleasant Valley County Water Dist., c/o Wm. P. Price, Jr., engrs., 854 Main St., Santa Paula, Calif. Bids May 26. Awarded June 13.

Pearce, McAllister & Thorsen Co., 1029 San Mateo Ave., San Bruno, Calif., LB **$102,815** (6 bidders) parking lot VI, REDWOOD CITY, CALIF. City, City Hall, Redwood City, Calif. Glenn M. Jain, c/o owner, city engr. Bids June 2.

▲ **Ratkovich Constr. Co.**, 1634 Brewster Ave., Redwood City, Calif., CA **$1,341,525** fill for runway extension, International Airport, South San Francisco. Contr. 262, SAN FRANCISCO, CALIF. City and San Francisco County, P. Utilities Comn., City Hall, San Francisco, Calif. Bids May 26. CD 6/1, under LB.

Brown-Ely Co., 101 Hy., Corte Madera, Calif., CA **$110,215** (5 bidders) street wid'n Sir Francis Drake Blvd., near Larkspur, SAN RAFAEL, CALIF. Marin Co., Courthouse, San Rafael, Calif. CD 11/9/56.

K. E. C. Co., 22018 S. Norwalk Blvd., Artesia, Calif., CA **$551,804** East Garden Grove-Wintersburg Channel from Beach Blvd. to New Hope St. and Oceanview Channel and Beach Blvd., Garden Grove, SANTA ANA, CALIF. Orange County Flood Control Dist., Court House, Santa Ana, Calif. Bids June 1 Awarded June 7. CD 6/8, under LB.

† **Granite Constr. Co.**, 725 Water St., Santa Cruz, Calif., CA **$112,073** HIGH ENERGY CHEMICAL FACILITIES, Site clearing, access roads, paved parking areas, 3 prefab bldgs., utilities, Santa Cruz, SUNNYVALE, CALIF. Lockheed Aircraft Corp., Missile Systems Div., P. O. Box 504, Sunnyvale, Calif. CD 8/6/58.

McGuire & Hester, Co., 807 75th Ave., Oakland, Calif., LB **$307,307** (7 bidders) Trunk Creek Sewer D at intersection of Moraga Blvd. and Fourth St. along Golden Gay Way and Mt. Diablo Blvd. Lafayette, WALNUT CREEK, CALIF. Central Contra Costa Sanitary Dist., 1250 Springbrook Rd., Walnut Creek, Calif. Bids June 2 CD 8/13/56.

BUILDINGS—LB & CA

▲ **Patti MacDonald Constr. Co.**, 1st & Karluk Sts., Anchorage, Alaska, CA **$4,522,800** est. $6,000,000 165 bed HOSPITAL, ANCHORAGE ALASKA. Sisters of Charity of Providence, 8th and L Sts., Anchorage, Alaska. Bids June 7. Awarded June 8. CD 6/13 under LB.

Fairbanks Builders, Inc., 1446 Turner St., Fairbanks, Alaska, LB **$650,865** (3 bidders) rehabilitation of MENTAL HEALTH FACILITY, VALDEZ, ALASKA. State Dpt. P. Wks., Juneau, Alaska. Bids June 15.

Jos. P. Howa, Box 1193, Salt Lake City, Utah, CA **$565,386** Cooperview ELEMENTARY SCHOOL, Midvale, SANDY, UTAH. Jordan School Dist., 9361 S. State, Sandy, Utah. Bids June 2. CD 6/14 under LB.

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA design and construct, pulp and paper MILL, NORTH BEND, ORE. Menasha Pulp & Paper Div., Menasha Wooden Ware Corp., Menasha, Wis.

▲ **Atkins-Cowan Constr. Co.**, 5144 Gardena Ave., Long Beach, Calif., LB $1,167,012 Hazard INTERMEDIATE SCHOOL, GARDEN GROVE, CALIF. Garden Grove High School Dist., 11231 Stanford St., Garden Grove, Calif. CD 1/12.

Burch Constr. Co., P. O. Box 377, 5126 Vineland Ave., North Hollywood, Calif., LB **$804,800** est. $800,000 West Valley SCHOOL for the Handicapped, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Sidney Eisenshtat, 1145 S. Beverly Dr., Los Angeles, Calif., archt. Bids June 10. CD 5/18 under LB.

▲ **Robert E. McKee Inc.**, 4701 San Fernando Rd., Los Angeles, Calif., LB **$10,900,000** (4 bidders) ACUTE UNIT and OUT PATIENTS BLDG., Harbor General Hospital, Torrance, LOS ANGELES, CALIF. Bd. Suprvs. Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids June 15. CD 4/4.

▲ **Construction Research Corp.**, 12415 Ventura Blvd., Studio City, Calif., Owner Builds, **$1,069,800**, 72 masonry veneer, frame, stucco DWELLINGS, Tract 75355, NORTHRIDGE, CALIF.

▲ **Kemp Bros.**, 8750 Mettler St., Los Angeles, Calif., CA **$1,004,700**, 3 story, bsmnt. rein.-con. HEALTH BLDG. NW corner of 11th and Orange Sts., RIVERSIDE, CALIF. Riverside County, Court House, Riverside, Calif. Bids June 1. CD 6/9 under LB.

Vance Brown & Sons, 2747 Park Blvd., Palo Alto, Calif., LB **$446,000** (6 bidders) Carl Sandburg ELEMENTARY SCHOOL, Evergreen St., SAN BRUNO, CALIF. San Bruno Park Elementary School, 500 Acacia Ave., San Bruno, Calif. Bids June 8. CD 5/25.

▲ **Shadow Hills Bldg. Co.**, 4525 Sherman Oaks, Van Nuys, Calif., Owner Builds, **$1,113,305**, 50 stucco DWELLINGS, Wells Dr., Bilmoor Pl., Calvin Ave., Bilmoor Ave., Shirley Ave. Tract 20930, TARZANA, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

ONTARIO—BA 7/13—Dpt. Hys., Parliament Bldgs., Downsview,
Huntsville—hot mix paving Hys. 109 and 111, contract 60-158, $100,000.
North Cobden—grading granular base, hot mix paving from Meath to North Cobden contract 60-45, $350,-000.

ONTARIO—BA 7/20—Dpt. of Hys., Downsview,
Cornwall—Contr. 60-86, gran. base, rein.-con. paving Hy. 401 from 1.3 mi. east of St. Andrews Rd. Cornwall to Lancaster, $1,100,000.

▲ **ONTARIO**—BA 7/20—Dpt. Hys., Parliament Bldg., Downsview,
Glenvale—grading, granular base, hot mix paving abt. 10 mi. Hy. 38 between Glenvale and Hartington contract 60-140, $200,000.

Ottawa—granular base, concrete pavement, hot mix pavement on two sections Ottawa Queensway from west of city limits easterly for 3.8 mi. and from Hy. 15 easterly 0.4 mi. to western limits contract 60-12, $1,000,000.

BUILDINGS—BA

▲ **Alta., Calgary**—COURT HOUSE—BA 7/7—Alberta Govt., Parliament Bldgs., Edmonton, structural steel concrete court house, $3,500,000. Plans deposit $200. CD 9/4/58.

▲ **Ont., Lindsay**—SCHOOL—BA 7/13—Dpt. P. Wks., East Block, Parliament Bldgs., Toronto, 40,000 sq. ft. brick, rein.-con. girls' training school, $1,000,000. Plans deposit $100. Chester C. Woods, 2842 Bloor St. W., Toronto, archt. Ralph Manning & Assocs., 745 Mount Pleasant Rd., Toronto, engrs. CD 2/26.

BUILDINGS—SLC

▲ **Ont., Niagara Falls**—PLANT EXPANSION—Nabisco Foods Ltd., 77 York St., Toronto, soon lets contract, 4 story 51,000 sq. ft. plant expansion, Lewis Ave. $1,000,000. C. C. Parker & Assocs. Ltd., 795 Main St. W., Hamilton, archts. CD 2/17.

▲ **Que., Montreal**—APARTMENT — Rembrandt Realty Co., 1410 Stanley St., soon lets contract, 14 story 150x56x140 ft., rein.-con., brick, stone apartment, Sherbrooke St. W., $1,500,000. Peter Dickinson, 1374 Sherbrooke St. W., archt. Brett Ouellette Blauer Assoc., 1010 St. Catherine St. W., engrs. CD 6/6.

▲ **Que., Three Rivers**—SHOPPING CENTER—Riverton Development Co., 940 Cote de Liesse Rd., Mount Royal, soon lets contract, concrete, steel shopping center, Hy. 2 near Blvd. Royal, $2,000,000. Reuben Fisher, 3177 Sulpice Rd., Montreal, archt. Bernard Geller, 5757 Decelles Ave., Montreal, engr. CD 2/18.

CIRCLE 265 ON READER SERVICE CARD→

NO. 12 MOVES FLEXIBLE BASE FAST —UP TO 3800 CU. YD./10 HR. DAY

The No. 12 pictured above is one of 4 Cat Motor Graders working on an Interstate Highway improvement contract being handled by T. L. James & Co., Inc. and R. W. McKinney of Corsicana, Texas. The 7-mile paving job is near Richmond, Texas, and calls for 62,178 cu. yd. of concrete plus 98,740 cu. yd. of gravel and 95,420 cu. yd. of flexible base.

To keep production high and on schedule, these contractors rely on the No. 12's superior performance and operating efficiency to move flexible base fast. Equipped with a 14-ft. blade, this unit spreads 3600 to 3800 cu. yd. per 10 hr. day.

This is the kind of production and dependability you can expect from the 115 HP Cat No. 12 . . . now, more than ever, with the many improvements incorporated in the *new* Series E model.

The most notable improvement is the new compact engine which provides greater lugging ability in tough going, long life and easier servicing. Horsepower remains the same (115) but this new engine develops higher torque and gives the No. 12 greater load-handling capacity. Besides a new compact engine, the No. 12 Motor Grader now has the dry-type air cleaner as standard. Removing 99.8% of all dirt from intake air this cleaner can be serviced in 5 minutes . . . cuts maintenance time by as much as 70% and substantially reduces cost . . . extends engine life.

Still retained are the many important features that have made the No. 12 the leader in its class. There's the oil clutch, providing up to 2000 hours without adjustment . . . the equivalent to 12 months of operation. Ample clearance between the top of the moldboard and the bottom of the circle drawbar provides greater rolling action . . . allows more material to move across the blade. Improved mechanical controls make engagement easier. Blade controls have a mechanical lock to insure positive blade position. When control is in neutral, the power shaft is locked by a set of gear teeth to prevent creeping.

These are just a few of the reasons why the NEW Cat No. 12E Motor Grader is out front. To get the complete picture, see your Caterpillar Dealer. He'll show you proof of top performance with an on-the-job demonstration!

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

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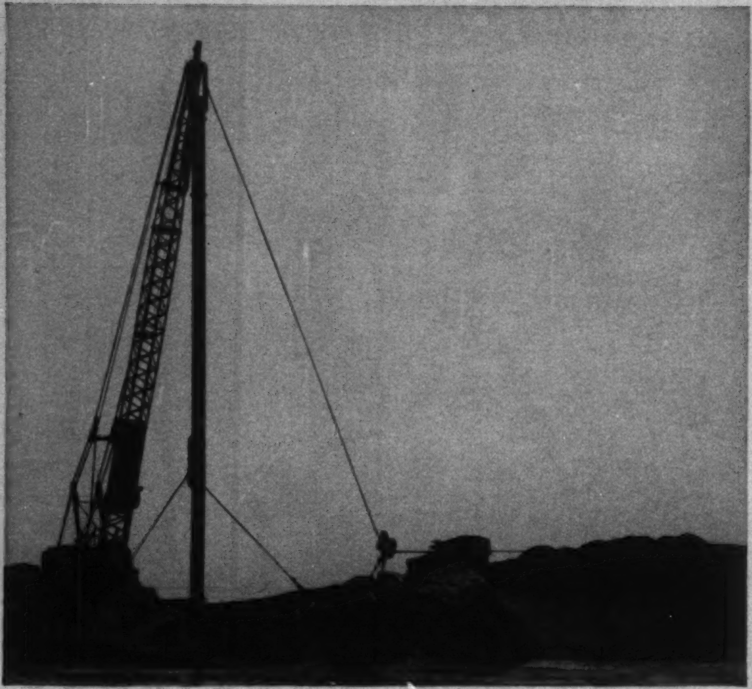
STEP UP PRODUCTION WITH THE IMPROVED NO. 12



Shoreline Reclamation by Crescent Scraper

Several million yards of sand and gravel are being used to extend the plant area of a Canadian steel company. Bottom-dump barges are used for the initial 20 ft. of fill. The additional 10 ft. below water and up to 15 ft. above lake level is built by redistributing the barge piles along the existing shore line.

The material is redistributed by a crane using a 5-yd. Crescent Scraper Bucket and carrier. On operating spans of up to 350 ft., the crane's hoisting line is used as a track cable. It is reeved through a block at the boom tip to a tail barge anchored offshore.

The barge swings on 200 ft. of anchor cable which permits a long period of crane operation before the anchor is shifted to a new location. The crane travels along the shore reclaiming material from a pie-shaped segment with the tail barge anchor as the vertex of the angle. The Crescent Bucket returns by gravity the full 350-ft. span. At average haul distances, it delivers 200 yd. per hr.

A Sauerman Crescent Scraper and carrier with a dragline crane is often the most economical solution to difficult excavating jobs. The normal reach of the dragline is greatly extended by using a track cable with a Crescent and carrier assembly. So equipped, its range is limited only by the spooling capacity of the drums.

Tubular mast supports 80 ft. boom on track cable setup. Tail barge in background. Load line is reeved through a Sauerman Fairlead on mast.

This arrangement has been used quite successfully for contract excavating jobs involving relatively small quantities of material. In many cases where unstable ground is encountered, the crane unit may be located on firm ground and the use of mats eliminated.

Find out how much you can extend the reach of your crane and increase its capacity. Write or call giving the make, model number and boom length of your machine. Field Report 231 and Catalog J. gives more information on Scraper operations with cranes.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
Linden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

HEAVY CONSTRUCTION—LB & CA

BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria, Bids Opened 6/3,

Peter Kiewit Sons of Canada Ltd., 1587 W. 8th Ave., Vancouver, B. C., LB **$306,210**, bit. surf. 21 mi. Squamish Hy., North Vancouver Dist. CD 6/1.

▲ **John Laing & Son (Canada) Ltd.**, Annacis Industrial Estates, New Westminster, LB **$1,093,110**, Lenark Avalanche Shed, Trans-Canada Hy., Revelstoke Dist., BRITISH COLUMBIA. Govt. British Columbia, Parliament Bldgs., Victoria, B. C.

▲ **Magloire Cauchon Ltee**, 239 De LaSalle St., Quebec City, Que., LB **$1,039,050** (6 bidders) underground canalization for purification of Lairet River, QUEBEC CITY, City, City Hall, Quebec City, Que. Bids June 7. CD 5/31.

BUILDINGS—LB & CA

Christensen & Macdonald Ltd., 612 Tegler Bldg., Edmonton, Alta., CA **$725,000**, 2 story, bsmnt, brick, concrete, steel BREWERY Addn. EDMONTON, ALTA. Northwest Brewers Ltd., 10542 Saskatchewan Dr., Edmonton, Alta. Blakey, Blakey & Ascher, 8631, 1095h St., Edmonton, Alta archts. Awarded June 7. CD 4/10/47.

George Born Constr. Ltd., 4063 Burke St., Burnaby, B. C. LB **$415,214** (13 bidders) concrete Rosedale Junior High SCHOOL, CHILLIWACK, B. C. School Dist. No. 33, Chilliwack, B. C. Bids May 31. CD 5/25.

▲ **Burns & Dutton Concrete & Constr. Co. Ltd.**, 1251 Vulcan St., Richmond, B. C., CA **$1,347,600**, steel, concrete CIVIC THEATRE adjoining Queen Elizabeth Theatre, VANCOUVER, B. C. City, City Hall, Vancouver, B. C. Bids Feb. 1, awarded June 7. CD 2/11.

▲ **P. W. Graham & Sons Ltd.**, Moose Jaw, Sask., CA **$1,250,000**, 3 story, bsmnt, T-shaped, 48 x 73 x 220 ft. rein.-con. HOSPITAL, addns. MOOSE JAW, SASK. Providence Hospital, Moose Jaw, Sask. Bids May 31. Awarded June 7. CD 5/12.

U. S. POSSESSIONS

HEAVY CONSTRUCTION—BA

† **Canal Zone**—BA 8/15—Engineering & Constr. Dir., Panama Canal Co., Balboa Heights, furnishing and installing 11,000 ft. 30 in. c.i. gravity main from Miraflores Filter Plant to Corozal. Plans deposit $50.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **COSTA RICA**—Ministry of P. Wks., Inter-American Hy. Office, San Jose,

Empressa Constructora Rafael Herrera, Ltd. and Louis R. Sommer, Apartado 1408, San Jose, Costa Rica, CA **$4,770,539**, 39 bridges between San Isidro Del General and Panama Border, Projs. 9-A, 9-B and 9-C. Bids May 28. CD 5/26, under LB.

▲ **EL SALVADOR**—Ministry of P. Wks., Proveedor Especifico de Obras Publicas, Edifico Morazan 8a, C. P. San Salvador,

Constructora Columbus del Peru, Ave. Wilson 1494, Lima, Peru CA est. **$4,339,717** road and bridges, section Feeder Road Program, Contr. H. Bids Feb. 29. CD 2/15.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Henry C. Beck Co.**, 205 Worth Ave., Palm Beach, Fla., U. S. A., LB **$1,690,000** (6 bidders) Blue Vista 28 unit APARTMENT, West Bay St., NASSAU, BAHAMAS, Blue Bay Developments, Inc., Butler-Sands Bldg., Bay & East Sts., Nassau, Bahamas. Bids June 2. CD 5/4.

FOREIGN

HEAVY CONSTRUCTION—BA

India—SUMER POWER STATION—BA 8/17—Additional Chief Electrical Engineer, Assam State Electricity Bd., Lachumiere, Shillong, K & J Hills, Assam, manufacture, supply delivery and erection of outdoor structures, switchgear, control and protective equipment for Sumer Power Station, Umiam Hydro Electric Scheme. Spec. No. (UB 403) against payment of $5.25.

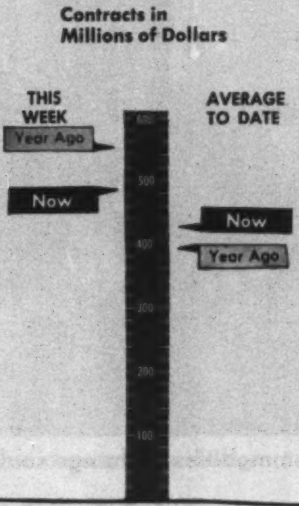
▲ **Sudan**—Bids Asked—Ministry of Irrigation & Hydro-Electric Power, P.O. Box 878, Khartoum, Roseries Dam Project, Damazin Rapids, Blue Nile River, incl. 1,110 meters long heavy buttress concrete dam with earthfill dams on either side, control gates, etc. $60,000,000. Andre Coyne & Jean Bellier, Paris, France, archts. Sir Alexander Gibb & Partners, Queen Anne's Lodge, London SWI, England, engrs. Contractors must pre-qualify before June 20.

HEAVY CONSTRUCTION—LB & CA

▲ **A. M. Carmichael Ltd.**, 9 Ainslie Place, Edinburg 3, Scotland, CA est. **$2,240,000**, 3½ mi. southern approach road for Fort Road Bridge with seven bridges and three fly-overs, EAST LOTHIAN, SCOTLAND. Fort Road Bridge Joint Bd., City Chambers, Edinburg 1, Scotland. Sir Giles Scott, Son & Partner, 9 Grays' Inn Sq., London, WC 1, England, archts. Mott Hay & Anderson, 9 Iddesleigh House, London S.W. 1, England, engrs.

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

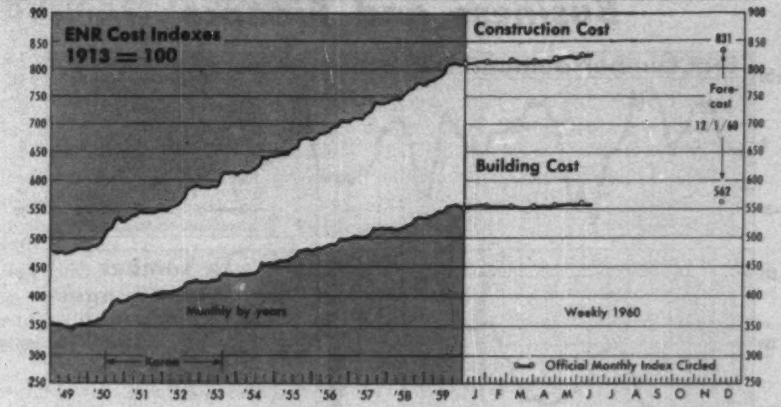
Contracts Awarded In 50 States By Type	This Week millions	Cum. 25 wks 1960 millions	Cum. 25 wks Chge '59-'60 %
All Heavy Construction	$485.1	$10,675.6	+ 8
By Ownership			
PRIVATE	223.8	5,837.7	+22
PUBLIC	261.3	4,837.9	− 6
State & Municipal	161.3	3,697.6	+ 4
Federal	100.0	1,140.3	−27
By Type of Work			
PUBLIC			
Waterworks	21.7	230.5	+11
Sewerage	13.7	270.0	−14
Bridges*	8.2	392.4	+34
Highways	69.2	1,525.4	+ 3
Earthwork, Dams & Waterways	14.6	358.9	−13
Buildings:			
Excl. Housing	56.2	1,134.9	−14
Housing	15.0	264.3	−31
Unclassified	62.7	662.7	− 7
PRIVATE			
Buildings:			
Mass Housing	87.4	2,995.1	+36
Commercial	66.9	1,102.8	+ 2
Industrial	52.1	1,263.5	+16
Unclassified	17.4	475.1	+123

*Includes Private bridge

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

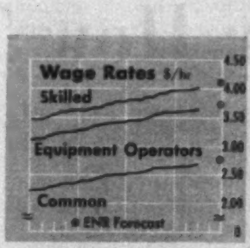
NEW CONSTRUCTION CAPITAL

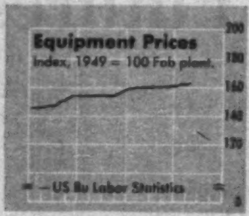
	Week of June 16 millions	Cum. 24 wks 1960 millions	Cum. 24 wks Chge '59-'60 %
Corporate Securities	$ 81.3	$1,431.9	−30
State and Municipal:			
All Except Housing	97.7	2,982.2	− 2
Housing	....	13.6	−56
Federal Loans	1.3	72.9	+ 9
Federal Aid	....	2,717.8	+1,410
Total Nonfederal	$180.3	$7,218.4	+39
Federal Appropriations:			
Projects in U. S.	....	191.6	+400
Outside U. S.	....	6.8	....
Total New Capital	$180.3	$7,416.8	+41

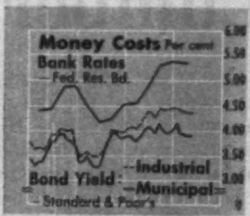


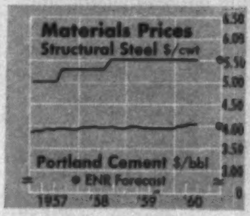
ENR INDEXES (1913=100), 20-cities' average	Week of June 16 1960	% Change from May 19 1960	% Change from June 18 1959
Construction Cost	826.58	+0.3	+3.4
Building Cost	560.36	+0.3	+1.9

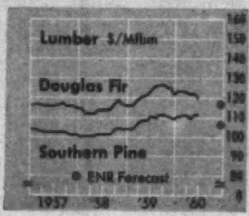
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

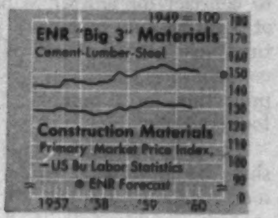












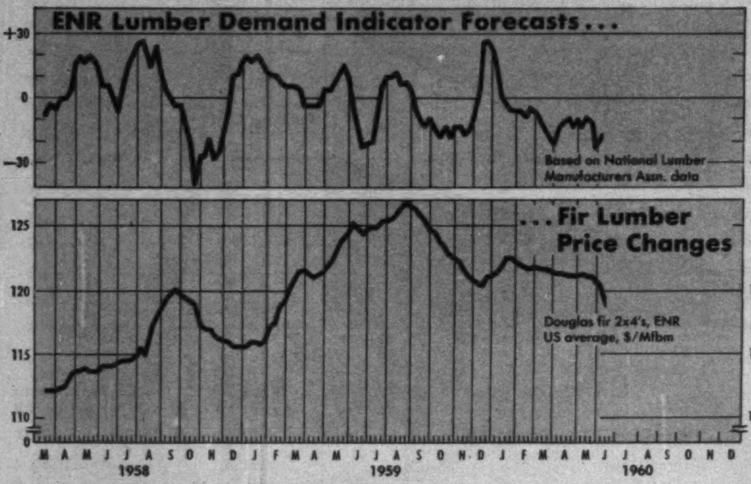
This Month . . .

ENR COST INDEXES IN 22 CITIES, 1913 = 100

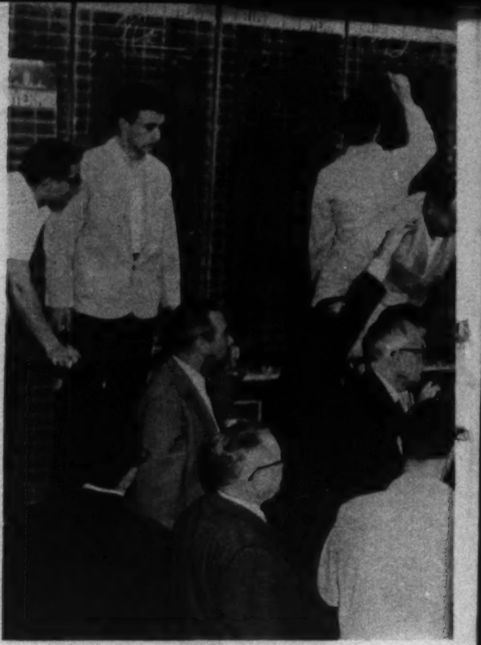
R: May Index Revised

City	Construction Cost June 1960	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost June 1960	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	633.26	0	+6.7	497.72	0	+4.4
Baltimore	754.72	0	+6.1	561.73	+0.4R	+3.3
Birmingham	653.77	0	+4.7	517.68	0	+3.9
Boston	836.48	−0.6	+0.5	560.48	−0.9	+0.1
Chicago	918.71	−0.2	+4.9	585.22	+0.2	+1.2
Cincinnati	844.79	+3.7	+7.0	547.08	+1.3	+3.4
Cleveland	944.49	0	+2.8	561.64	0	+1.5
Dallas	629.06	0	+9.8	519.19	0	+9.6
Denver	752.96	0	+1.5	545.04	0R	+1.6
Detroit	984.14	+4.2R	+2.3	604.50	+0.9	+4.5
Kansas City	811.06	+1.6	+2.2	561.76	0R	+2.3
Los Angeles	870.38	0	+3.7	565.75	0R	+2.6
Minneapolis	890.16	+3.5	+4.2	573.10	+0.6	+1.6
New Orleans	649.46	0R	+4.8	517.21	0R	+3.7
New York	1,008.40	−0.2	+3.0	646.51	+0.2	+1.1
Philadelphia	830.37	0R	+3.2	582.90	0	+0.1
Pittsburgh	870.14	0R	+3.6	614.45	+0.9	+3.2
St. Louis	899.81	−0.2R	+1.0	583.39	−0.4R	−1.2
San Francisco	884.98	−0.1	+7.4	553.64	+0.8	+0.7
Seattle	857.25	−0.3	+2.5	503.73	−0.4	+0.9
U. S.—20 Cities' avg.	826.24	+0.8R	+3.9	559.93	+0.4	+2.1
Montreal	650.39	0	+6.6	466.08	0	+3.7
Toronto	697.39	0	+4.0	497.28	0	−0.6

Business and Finance



There is a guide to future lumber prices, but . . .



A commodities exchange could

Lumber Futures: How They Could

One of the thorniest problems building contractors encounter—estimating the cost of lumber—may be solved if a recently proposed commodity market for lumber becomes operative.

Such a market would enable builders to contract for lumber to be delivered at a future date at today's prices. Futures markets, a normal operation in commodities, have been providing price protection for a number of industries for about a century.

The proposal has impressive sponsorship. Its author is E. A. Beveridge, former economist for the world's largest stock and commodity broker, Merrill Lynch, Pierce Fenner & Smith, Inc. And John W. Clagett, president of New York's 81-year-old Mercantile Exchange, promises cooperation if lumbermen and contractors want the price protection of a futures market. Llewellyn Watts, Jr., chairman of the Exchange's Board of Governors, is forming a special committee to study the proposal. Chairman will be Harry A. Aspinwall, New York City commodity broker.

Here's how it would work: Take a purely hypothetical example. Alpha Beta & Co., a big N. Y. builder, needs about 900,000 bd-ft of 2-in. fir lumber in varying widths and lengths for a mass housing project. The company sends an order to the floor of the N. Y. Mercantile Exchange. Within minutes, a broker representing Alpha Beta contracts for 900,000 bd-ft of fir to be delivered in three months.

The lumber futures contracts would call for delivery of a basic grade, 2x4, s4s Douglas fir, #1 common, for example. But following standard procedure of other futures markets, different grades and dimensions than ordered could be delivered at premiums or discounts, depending on whether the lumber is of a higher or lower grade. Alpha Beta has very particular lumber requirements, however. If it accepted delivery on the futures contracts the lumber received might not meet the company's needs. Alpha Beta therefore liquidates its contracts as the project progresses, using the money it obtains to buy from its local source the exact type needed.

Let's assume that lumber prices rise. Alpha Beta's futures contracts are liquidated at a profit and applied to the purchase of lumber from the dealer. In this case, Alpha Beta used the futures market, not to actually obtain lumber, but to protect itself against higher prices. This, say Mr. Beveridge and Mr. Clagett, is the proper function of the market.

If lumber prices declined, Alpha Beta would "lose" on its futures transaction. But this "loss" would be wiped out because the cost estimate—and the selling price—on the houses were based on higher lumber prices.

Meanwhile, Alpha Beta has been protected from underestimating, which could have resulted in a reduced profit, even a loss, on the job had lumber prices risen and the company not hedged in the futures market.

Mr. Beveridge believes that a lumber futures market will not only give building contractors much needed price protection but will be much more efficient and cheaper than the practice of making individual future delivery deals with local lumberyards, as some builders do.

Within the industry, however, opinion is divided. A major New York lumber supplier feels that lumber futures might give builders more price protection than future-delivery deals with yards. He says the contractors without top-drawer credit ratings have to put up as much as 30% cash on these deals. Mr. Beveridge says "security" on lumber futures would run about 10%.

A. Fletcher Marsh, board chairman of Chicago's Marsh & Truman Lumber Co., disagrees. He believes that contractors can get ample price protection by negotiating with dealers.

A large Pacific Coast lumber producer, however, tells ENR that while there would be problems to overcome, "Anyone in the forest products industry, or any industry for that matter, would be foolish not to welcome any influence that would help to prevent excessive price fluctuations. If it were possible for this to be an end-result of establishing a futures market in lumber, it would be beneficial to the industry and to our company."

Exchange president Clagett says that while a lumber futures market could not prevent price fluctuations, it could take the sting out of them. He adds that futures trading might actually lower the cost of lumber. "If they could sell lumber for future delivery,

give builders a price hedge.

Work

lumbermen wouldn't have to cushion the value of their inventories with higher prices."

What's more, "This price protection would enable lumbermen to carry larger inventories, perhaps helping to carry out the aims of the National Lumber Manufacturers Associations' multi-million-dollar campaign to step up lumber usage," Mr. Clagett says.

Supporters of the plan recall that the need for lumber price protection led to an attempt several years ago to establish a lumber futures market. The venture was short-lived, however, because it lacked sound trading rules developed and administered by a national commodity futures exchange. It also was short the capital needed to carry it until sufficient volume was established to make it self-supporting.

Right now, ENR's Lumber Demand Indicator at −17 (see chart) says that contractors don't have immediate worries about price jumps. This indicator measures the shifting relationship of lumber mills' unfilled orders to their fir lumber inventories. The further above the zero base line the indicator curve moves, the more intense is the demand for fir lumber and the more likely is a price rise. Movements of the indicator curve below the zero base line show falling demand and a coming price slide (ENR Mar. 31, p. 81).

The current lumber price slide will reverse at some future date. Building contractors then will have a real need for the price protection that could be supplied by a lumber futures market.

Business in Brief . . .

- **California building program**—The $2.5-billion state budget signed by Gov. Edmund G. Brown, calls for buildings outlays of $130 million in the 1960-61 fiscal year. Largest outlays: University of California, $50.7 million; state colleges, $39.5 million; prison conservation camps, $10.3 million; and beaches and park improvements, $5.5 million. The remainder will go for office buildings and additional buildings at state institutions.

- **Shopping center market**—More than 15,000 shopping centers will be built in the U. S. between now and 1970, according to Leonard L. Farber, president of the International Council of Shopping Centers.

- **Blaw-Knox modernization**—A $12-million to $15-million modernization program is planned by Blaw-Knox Co., Pittsburgh. It will be centered largely in major properties serving the metallurgical industries.

- **Canadian housing market**—Residential construction in Canada may drop 30% this year, according to John Caulfield Smith, vice president of the National Home Builders Association.

- **Baltimore building plans**—Bond issue proposals of $42.6 million will be on the Baltimore ballot at the November elections. Largest amount, $18 million, would go for school construction. Other major expenditures would include: sewers, $7 million; highways, $6 million; public buildings $5.5 million; parks and playgrounds, $1.1 million; and conduits, $1 million.

- **Plant expansion** — Minneapolis-Honeywell Regulator Co. will nearly double its Golden Valley plant near Minneapolis in a multi-million construction project that will add 227,000 sq ft to the existing 273,000-sq-ft plant completed just three years ago.

- **Steel mill moves way south**—Shipment of an armor-plate mill from Gary, Ind., to Buenos Aires will be the first stage in constructing an $84-million steel rolling mill for a cooperative corporation of Argentine steel industries. Patterson-Emerson-Comstock, Inc., Pittsburgh engineer-contractor organization, negotiated the contract.

- **United we build**—Federal-state cooperation has brought about a construction start on the Corps of Engineers' Black Butte Dam. The State of California has guaranteed $7.3 million of the $18.3-million cost, pending negotiation of repayment contracts by the Bureau of Reclamation with water users. George M. Brewster & Son, Inc., Bogota, N. J., will build the 140-ft-high earthfill on Stony Creek, near Orland, Calif.

- **San Diego's tallest**—A 24-story $6½-million skyscraper will be built in downtown San Diego, Calif., starting next January. Two stories below ground and six above will be devoted to 120,000 sq ft of parking. The remaining 176,000 sq ft will be for offices. The developer is Irvin J. Kahn, a San Diego builder.

- **Assignment in India**—Kaiser Engineers Overseas Corp., Oakland, Calif., has a contract to provide technical services for engineering and construction of a $3.5-million portland cement plant for Mysore Cements Ltd., of Ammasandra, Mysore State, India.

- **Development down under**—The Department of Main Roads, Sydney, N. S. W., Australia, is looking for offers to finance, design and build a $45-million tollroad in the Sydney and Newcastle areas.

- **Outlays for oxygen plants**—Linde Co. Division of Union Carbide Corp., will spend $50 million in the next year for expansion and construction of 16 oxygen plants. Eleven will be adjacent to steel mills, two will be at chemical plants.

- **Dallas development**—Construction of Cary Plaza, an 18-story luxury apartment tower and a 22-story hotel, will begin this month in downtown Dallas. The two towers will be joined by a landscaped terrace. Estimated cost: $10 million.

- **Plant for Dixon**—A $3.5-million hydrofluoric acid plant will be built at Paulsboro, N. J., for Dixon Chemical Industries, Inc.

- **Money coming**—California voters recently approved issuance of $700 million worth of bonds; $300 million for school construction and $400 million for veterans' farm and home loans.

Boston Job Awaits New Court Test

Work on the $150-million Prudential Center in Boston soon will be stopped pending a court decision on the legality of a proposal to give the owner a financial break on payments to the city. When foundation work is completed in a few weeks, no other operations will be started, says a spokesman for the owner, Prudential Insurance Co. of America.

The second and latest plan to save the project for the city calls for amending the Boston Redevelopment Act so that the 31-acre site can be classified as a blight area, making it eligible for tax concessions to the owner.

This proposal was made after an advisory opinion by the State Supreme Court held unconstitutional legislation that would have authorized sale of the land to the Massachusetts Turnpike Authority (ENR June 9, p. 91). The authority then would have leased air rights to Prudential for an annual amount equal to the below-normal tax payments Boston had first informally agreed to.

Legislation now being prepared will contain four key provisions:

- Amend the Redevelopment Act to allow commercial and industrial buildings on the tract. Present laws limit financial concessions only to sites redeveloped for housing.
- Transfer the staff and operations of the City Planning Board to the Redevelopment Authority, and also expand the powers of the authority. The Redevelopment Authority currently has no full working staff; it's basically only a skeleton group.
- Permit Prudential to retain ownership of the land and make annual payments to the city in the form of "excise taxes" instead of real estate taxes. The present redevelopment statute requires ownership of land by the city, which is then leased to the developer.

The excise tax terminology, however, is contained in the existing legislation. This allows financial concessions without violating other statutes that specify equal real estate taxes on equal assessment values.

- Allow Prudential to pay to the city more than is now specified in the Redevelopment Act. Existing law calls for tax payments equal of 1% of assessed valuation plus 20% of income. Under the original city-Prudential agreement, annual payments would run much higher than if the Redevelopment Act formula were applied.

The new plan will be subject to acceptance by the authority, and the negotiation of a contract between the company and the city. The agreement would specify operating standards, net income limitations and tax payments.

When a contract is signed, Prudential says "appropriate legal proceedings must be instituted to ascertain that the amended redevelopment law is constitutional."

Such court action is expected to be a formal one, not an advisory one, as was the ruling that precipitated the move to amend the existing Redevelopment Act.

The financial break granted Prudential has aroused the opposition of a few property owners, who may still bring a court action.

Should a decision go against Prudential, chances are good that the project would be abandoned by the company, despite actual cash outlays of more than $10 million and another $3 million worth of commitments. The company says that it could not operate the project profitably under present city levies and that any tax abatement agreement must be contained in a contract found constitutional.

The latest plan puts the Massachusetts Turnpike Authority back where it started before "marriage" of the center and extension of the Massachusetts Turnpike into Boston was proposed. That authority can only hope that some day it may be able to fulfill its plans to construct the $200-million extension. A different opinion by the court three weeks ago may well have made the new road a reality.

R. I. Rushes Its Interstate Routes

Rhode Island voters have endorsed a $200-million borrowing proposal that will enable the state to complete its Interstate highway program in seven years instead of the 14 years originally planned.

By a three-to-one vote in a special referendum Rhode Islanders authorized: short-term borrowing of $63 million in anticipation of federal aid; issuance of long-term bonds totaling $15.5 million to pay the state's 10% share of the Interstate program; and $20 million in borrowing for roads built on a 50-50 basis with the federal government (ENR May 19, p. 181).

After all federal reimbursements are made, the highway program will cost Rhode Island $40 million.

The program will include: limited access highways from Hopkinton at the Connecticut line to the Pawtucket River bridge; a circumferential highway around the Providence-Pawtucket area from the Massachusetts line to the northern part of the state; completion of the East Providence Expressway; and 50 intrastate highway projects.

The first part of the program to be completed will be the North-South Freeway, which has been under construction for several years.

The circumferential highway will be built during the latter part of the seven-year program.

In another statewide referendum in November Rhode Island will vote on a legislative measure to provide a state guarantee of $20 million of a proposed $36-million revenue bond issue by the Rhode Island Turnpike and Bridge Authority to finance construction of a toll bridge between Jamestown and Newport.

States Get Record User Taxes

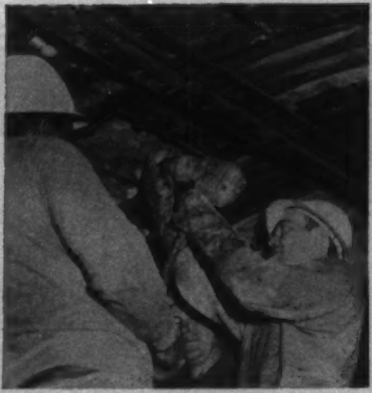
State highway-user taxes collected last year set a new record, passing the $5-billion mark for the first time.

The total of $5.1 billion was a gain of 8.3% over the comparable 1958 figure, according to Bertram D. Tallamy, Federal Highway Administrator.

Motor-fuel taxes totaled $3.27 billion, compared to $2.98 billion in 1958. Motor vehicle registration fees tallied $1.45 billion as against $1.37 billion in 1958. Other motor vehicle and carrier fees brought in another $377 million.

Receipts for the two years, however, are not exactly comparable because totals for Alaska and Hawaii are included for the first time in the 1959 tabulations. The total for the two new states is less than $16 billion.

Although the over-all figure is a large one, not all of the money will go to highway construction. Administration and collection costs must be deducted, and in many states not all highway-user taxes pay for roads. Some states place gas tax revenues in the general fund from where it is paid out for schools, institutions or welfare (ENR Mar. 19, 1959, p. 250).



PLATES FIT-UP FAST—All bolts go through inside flanges of liner plates—tightened with compressed air speed wrenches.

STRAIGHT LINE CONTACT—"Tees" welded to plates butting one against another transfer shield jack thrust through entire lining.

How liner plates disperse 150-ton jack thrust

Ordinary tunnel liner plates could not stand the gaff at the South Charles Relief Sewer Tunnel, Boston, Mass. Tunnel lining is 11 ft. 3 in. diameter, 7948 ft. long and follows a serpentine course (12 curves 2735 ft. in radii of 200 ft. and 1400 ft.) under the city streets. Tunnel depth varies 25 ft. to 45 ft. through clay, silt, sand, peat and aggregate. Because of the nature of the ground and to speed holing-through, the contractor, MacLean-Grove & Company, Inc. of New York City, employed an extra-long-hooded shield, driven in 16 and 32 in. thrusts by 11 hydraulic jacks and supported by 4 breast jacks.

- **Solving the jack thrust problem:** Tremendous back thrust (150 tons each) of hydraulic jacks would buckle ordinary liners. COMMERCIAL produced a unique, effective answer by welding two angles to each jack-contact point of plates. Back to back they formed tees. This created continuous horizontal, straight-line contact against which thrust could be applied and dissipated back into the tunnel without buckling of the liner plates.

- **Solving the curves problem:** COMMERCIAL tapered plates, complete with welded tees, provided the answer here. Varying slightly in dimension, they permitted gradual turns while maintaining the snug fit necessary for thrust dissipation and ground support. Plates were keyed and matched at COMMERCIAL before shipping to insure no trouble at tunnel site.

This unique application is typical of COMMERCIAL's engineering assistance in solving tunnel support problems. Over 35 years experience makes COMMERCIAL the good source for ideas, products and service to help you speed up and simplify your next tunnel job—whether vertical, surface, subsurface, soft or hard ground. For complete details write to Commercial Shearing & Stamping Company, Dept. E-26, Youngstown 1, Ohio.

COMMERCIAL
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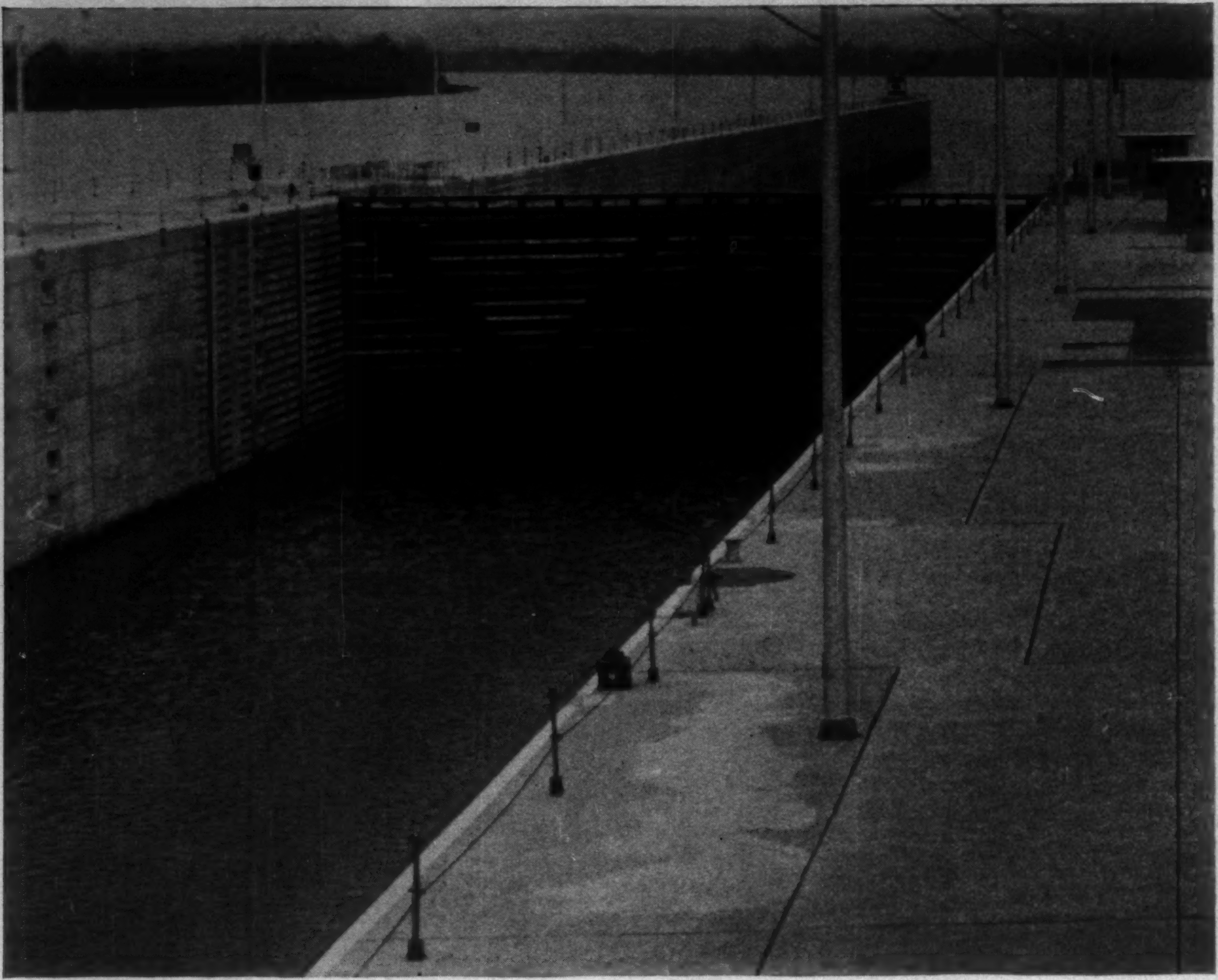
CIRCLE 271 ON READER SERVICE CARD

Gate Fabricator: Nashville Bridge Co., Nashville, Tenn. • Hoist Girder Fabricator: McNally Pittsburg Mfg. Co., Pittsburg, Kansas



USS "T-1" Steel saves 289 tons

This is a story about how the tremendous strength of USS "T-1" Steel was utilized to save 289 tons of weight in the lock gates at the new Greenup, Kentucky and Markland, Indiana locks and dams on the Ohio River. Each lock gate has five diagonal braces that were designed for USS "T-1" Constructional Alloy Steel. At Greenup, it was estimated that 64 tons of "T-1" Steel did the work of 213 tons of carbon steel in eight gates. At Markland, shown in the picture above, 60 tons of "T-1" Steel were used instead of 200 tons of carbon steel to do the same job.

The diagonal units provide the supports which are absolutely essential to brace the gates. Each diagonal is a flat bar 8 inches wide by 1½ inches thick and about 73 feet long and weighs around 3,200 pounds. Toward the center of the diagonal is a turnbuckle used to adjust tension. By using USS "T-1" Steel, which has a minimum yield strength of 100,000 psi, both the size and weight of the diagonals were greatly reduced while retaining an ample factor of safety.

Lower costs. Reduction in weight because of the use of USS "T-1" Steel meant lower overall material costs, reduced shipping costs by more than one third and decreased handling and erection costs.

Greenup & Markland Lock and Dam Construction: Supervised by Huntington and Louisville District, United States Army Corps of Engineers

# of weight in 16 lock gates

USS "T-1" Steel for hoists. Four hoists for the emergency gates at Greenup locks and dam were also built of USS "T-1" Steel by McNally Pittsburg Mfg. Co., Pittsburg, Kansas. The structures are girder sections about 25 feet long and 41 inches deep. Flanges are 20 inches wide by 2½ inches thick. The webs are 36 inches deep by 1¼ inches thick. All were fabricated from "T-1" Steel plates. Each girder weighs about 12,000 pounds.

The new locks and dam on the Ohio River at Greenup, Kentucky were built under supervision of Huntington, W. Va. District, U. S. Army Corps of Engineers. A similar set of locks at Markland, Indiana was built under the Louisville District, U. S. Army Corps of Engineers.

Other uses of USS "T-1" Steel in construction. Wherever great strength is needed with least weight, such as in bridges, TV towers, pressure vessels, and high pressure penstocks, USS "T-1" Steel is unsurpassed because of its high yield strength, high resistance to impact abrasion, and weldability. For complete information write for our "T-1" book. United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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National Tube – Pittsburgh
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United States Steel Supply – Steel Service Centers
United States Steel Export Company
United States Steel

This mark tells you a product is made of modern Steel.

CIRCLE 273 ON READER SERVICE CARD

Industry Protests Tax Ruling

Employer responsibility for the withholding of federal income taxes on travel and subsistence pay to construction workers may be considerably eased and simplified as a result of joint, top-level efforts of management and labor.

At an informal meeting with Internal Revenue Service officials in Washington, D. C., last week, unofficial assurance was reportedly received that some relief will be granted. IRS is expected to take the necessary steps to free contractors from the necessity of constantly reviewing and evaluating the employment status and prospects of every worker to assure withholding of the proper amount of federal income tax.

Contractors have been required since January 1 to withhold taxes on allowances or reimbursements paid to workers to cover the cost of the workers' daily transportation expenses to and from the jobside, or to cover the cost of meals and lodging, whenever one or more of three things happen:

- A worker has worked for a year in any project area.
- It looks, at the time of hiring, as if the worker will be in the project area for more than a year.
- It becomes apparent at any time along the line that the worker will be in the project area for more than a year.

The requirement is contained in Revenue Ruling 59-371. Some employers have considered it impossible to live with because it demands constant employment review and inclusion of previous work in the same area.

As a result of last week's meeting, IRS is expected to issue an amended ruling that will wipe out the anticipatory features of the present one. It has reportedly accepted the principle of limited, periodic review of payroll status. Likely result is a new rule calling for a quarterly review, with withholding liability imposed only with respect to workers who have then been on the job for a year.

The problem, of course, is part and parcel of the travel and subsistence tax problem that has troubled the industry for years. The workers' interest relates to the deductibility of such expenses for their own income tax purposes and is substantially controlled by the Peurifoy case and recently issued Revenue Ruling 60-189 (ENR May 19, p. 23).

The common problem faced by contractors and employees stems from this rule: To escape taxability and withholding, travel allowances and subsistence pay must, among other things, be received on jobs of temporary rather than indefinite duration. The one-year criterion has been developed by IRS as one of the guides in determining taxability.

Purpose of the ruling now contested is to alleviate the hardship that occurs when a worker gets taxed on the payments and nothing has been withheld to meet the deficiency. Withholding under the ruling, however, does not preclude a later contest of taxability by a worker and a refund of the amount withheld if he succeeds.

Efforts to get the withholding ruling repealed or put on a more practicable basis were initiated by the National Constructors Association, supported by the Mechanical Contractors Association, Burns & Roe, Inc., and the international plumbers union.

The problems created by the ruling were discussed within the framework of the Construction Industry Joint Conference. And then the prime movers in the protest were joined by the AFL-CIO Building and Construction Trades Department, Associated General Contractors, National Electrical Contractors Association, Painting and Decorating Contractors of America, National Association of Home Builders and Sheet Metal & Air Conditioning Contractors National Association.

Specifically, the labor and management forces asked IRS to:

- Suspend application of the present ruling pending disposition of the application for its revocation or modification.
- Rule that subsistence and travel payments are not subject to withholding because they do not represent compensation for services.
- Allow employers, if the withholding requirement remains, to make their determinations at a fixed period, preferably at the end of each calendar year, and to commence withholding with repect to employees who have then worked in the project area with that employer for a substantial period of time, preferably 18 months.

Labor Admits Limits of Picketing Bill

The AFL-CIO Building and Construction Trades Department has accused newspapers and employer groups of making "unfounded and extravagant" charges about the effects of the construction industry's situs picketing bill.

In an effort to make the bill look less like a "hot potato" than its critics claim it is, the department has attempted to refute the charges in a memorandum sent to all senators and congressmen. A copy of the memorandum was mailed last week to all state and local building trades councils and to all local building trades unions.

What the bill would do, the department says, is simply remove an "inequitable restriction" on peaceful picketing for lawful purposes at the site of a construction job. This would be accomplished, it continues, by reversing a Supreme Court rule in the Denver Building Trades case that peaceful picketing for a lawful object becomes an unlawful secondary boycott when more than one contractor is working at the site.

The bill has subjected members of Congress to heavy pressure from many quarters. As of last week it was still locked up in committee, although it has the support of the Administration, the Secretary of Labor and the House Labor Committee. The chances of its ever getting to a floor vote were considered slim.

The building trades' reply to critics of the bill is particularly significant because it represents union admission that the bill would give construction unions a break only in a limited area.

The department concedes, for example, that the bill:

- Is limited to construction site activity and would not permit strikes against manufacturing plants, office buildings or retail stores.
- Would not legalize product boycotts.
- Would not legalize the closed shop.
- Would not lift the present restrictions on organizational and recognition picketing.
- Would not legalize jurisdictional strikes.

The memorandum heavily stresses the favorable legislative history of the bill in a further effort to undermine the critics of the bill.

The present language of the bill, it says, is identical to that contained in the Administration Labor Reform bills introduced last year. One of them was introduced by conservative Sen. Barry Goldwater (R., Ariz.).

During the six years the bill has been on the docket, the department points out, it has been approved by President Eisenhower on three occasions, by the House Labor Committee in three sessions and by the Senate Labor Committee in the 1954 session.

Quoting Sen. John Kennedy (D., Mass.), one of the bill's sponsors, the department says the bill has been thoroughly debated and debated long enough and that the time for action has come.

Labor in Brief . . .

- **Say "Ah"**—Pre-employment physical examinations for building trades apprentices were recently recommended to New York City plumbing contractors by a member of the New York Workmen's Compensation Board as a means of reducing the frequency and severity of on-the-job injuries. Construction workers should be free from "incorrectable physical defects," he said.

- **Fish or cut bait**—Court-appointed teamster monitor William Bufalino has urged that the teamster monitors operate as a board or close up shop. In the absence of any legal obstacle to the proper functioning of the board, he told monitor chairman Martin O'Donoghue, there is no justification for the "over-staffed" board's present inaction.

- **More training**—The International Brotherhood of Electrical Workers is trying to organize locally financed and operated post-graduate training courses that will help fill the manpower gap between journeymen electricians and graduate engineers. A collateral aim is to overcome some of the employment problems caused by automation.

- **Merger completed**—Pennsylvania AFL and CIO forces have merged into the new state AFL-CIO, leaving New Jersey the only state still unmerged. Co-president of the new state organization is Joseph F. Burke, a member of the sheet metal workers union.

Iron Workers End Two Strikes

Members of Local 1 of the iron workers union in Chicago returned to work last week after signing a new, two-year labor contract that includes a 40-cent hourly increase in basic wages. Plasterers and roofers, however, remained on strike.

The iron workers had been on strike since June 11, halting millions of dollars worth of construction, including work on the Congress Street Expressway and the Northeast Highway.

The contract, retroactive to June 1, calls for a 20-cent-an-hour pay boost this year and an additional 20 cents next June 1. Union spokesmen said the employers—members of the Steel Erectors Association of Chicago—had abandoned their demand for work rule changes involving welders' helpers and shiftwork.

At the same time, work was resumed on more than 100 projects in eastern Michigan as members of another iron workers local—No. 25—ended a strike that began May 10.

Terms of their new agreement, reached with Associated General Contractors, provide for an hourly wage increase of 30 cents spread over two years.

A similar increase has been won without a strike by iron workers in upstate New York in statewide negotiations. Increases of 15 cents each year under a two-year contract will push the union scale to $4.10 on June 1 next year. Welfare and pension contributions of 10 cents each continue.

The negotiations, which covered all of upstate New York except Buffalo, Niagara Falls and Syracuse, were conducted by six contractor associations through a Contractors Composite Committee and the Iron Workers District Council of Western New York. This is the first time the bargaining has been on a statewide basis and is one of the aftermaths of a long and bitter strike that occurred two years ago.

Elsewhere, agreement on a 48-cent package over three years has ended a 16-day carpenters strike that affected $97 million in public and commercial construction work in Minneapolis and St. Paul, Minn.

The first increase in basic wages—15 cents an hour—is deferred to May 1 next year, when a three-cent increase in the form of an "adjustment" is also effective. These are followed by a 10-cent wage boost in May 1962. Meanwhile, union members received an immediate increase of 15 cents for health and welfare. A five-cent tool maintenance payment goes into effect September 1.

Earlier, five other basic, Twin Cities trades had also settled for 40-cent increases—15, 15 and 10—over three years. The trades were bricklayers, cement finishers, teamsters, laborers and operating engineers.

Other recent settlements include:

- Electrical workers, Des Moines, Iowa—a two-year contract that boosts wages 32½ cents in three steps (10, 2½ and 20), adds 7½ cents for vacations and ups health and welfare benefits by five cents.
- Floor layers (carpenters) in Des Moines—a three-year contract that raises wages 20 cents now, 17½ cents next June and 17½ cents in June, 1962, when the scale will be $3.60.
- Roofers and sheet metal workers in Albany, N. Y., settled a one-day strike with a one-year contract that increases wages by 15 cents and establishes a 10-cent pension fund. New scale is $3.55. A 10-cent welfare contribution continues.

AEC Test Site Is Struck Over Use of Technicians

A strike over one of the construction industry's most explosive labor issues hit the Atomic Energy Commission's Nevada Test Site earlier this month.

The issue: When are technicians doing building trades work?

The NTS strike affected about 1,000 construction workers. It completely halted work on the Pluto project and slowed down work on the Rover project.

Fred Hohmer, chief of AEC's Las Vegas division, said it raised the possibility of having to move the entire NTS operation to another site.

The AEC chief said disputes develop every week between the AEC technicians and the union craftsmen. He stated that the unions want all the technicians thrown out.

A spokesman for the Associated General Contractors called the craft union strike a "brazen breach of contract." He said he was filing unfair labor practice charges against the unions on behalf of the contractors.

Major contractors involved in the dispute are Reynolds Electric Co., Haners and Narver, Tiberti and Walsh, Ets Hokins and Gavin, and Halvorson, Inc.

OFFICIAL PROPOSALS

Bids: July 14, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 14th day of July, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York						
Essex (Rte. 28N)	R.C. 60-123	County Line-Aiden Lair, Pt. 1, S.H. 658 Minerva-Aiden Lair, S. H. 5186 Aiden Lair-Newcomb, Pt. 1, S.H. 5187	6.90	Asphalt Concrete	$12,000 Plans $5	$223,000
Rensselaer (Rte. 154)	R.C. 60-54	Spring Ave: Troy-Poestenkill, S.H. 571	0.35	Asph. Conc.=0.30 Mi. Misc. Work=0.05 Mi.	$3,000 Plans $5	58,000
Warren (Rte. 9N)	R.C. 60-111	Bolton Landing-Sabbath Day Point, Pt. 2, S.H. 1718	5.02	Asphalt Concrete	$11,000 Plans $5	204,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery	U.S. 104	Lock 13-E, Erie Canal near Randall	....	New Lock Gates, Lowering Sills and Misc. Work	5% of Bid Plans $10	Not Published
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington St., Syracuse, New York						
Oswego (Old Rte. 57)	R.C. 60-122	Fulton-Oswego, S.H. 5382	7.50	Asph. Conc. Type 1A	$4,500 Plans $5	78,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Ontario (Rte. 245)	R.C. 60-119	Rushville-Gorham, S.H. 662; Gorham-Stanley, Pt. 1, S.H. 203; Gorham-Stanley, Pt. 2, S.H. 1196; Stanley-Geneva, S.H. 636	7.56	Asphalt Concrete	$17,000 Plans $5	300,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua & Erie (Rte. 5 & 20)	R.C. 60-107	Irving-Silver Creek, S.H. 5452	0.07	Rehabilitation of Bridge Steel Truss 2 Sp. 267′ Total	$4,500 Plans $5	79,000
Erie (Rte. 240)	R.C. 60-120	Aurora-Glenwood, Pt. 2, S.H. 751	6.15	Asph. Conc.=6.06 Mi. Misc. Work=0.09 Mi.	$28,000 Plans $5	501,000
Niagara (Int. Tour. Rte. 190)	FINIE 60-2 NIE 60-3 FARC 60-126	Interstate Route 506, Niagara Expressway (Contract 2) Suspension Bridge-Lewiston, S.H. 475 Project I-190-1(3), (U-461(11)	0.92 (1.78 Acc.)	Grading=1.71 Mi.; 9″ Cem. Conc. Pavt. 2 @ 24′=0.32 Mi.; Asph. Conc. Pavt.=0.12 Mi.; Asph. Conc. Type 2B Pavt.=0.08 Mi.; Bit. Double Surf. Treat.=0.11 Mi.; Misc. Work=0.36 Mi.; H.G.S. Comp. WF Beam 3 Sp. 142.67′ Total; H.G.S. Comp. WF Beam 3 Sp. 148.0′ Total	$50,000 Plans $5	929,000
DISTRICT No. 6, Wm J. Dennis, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben & Schuyler (Rte. 226)	R.C. 60-116	Savona-Bradford, S.H. 1102 Bradford-Tyrone, S.H. 1420	8.20	Asphalt Concrete	$14,000 Plans $5	245,000
Tioga (Rtes. 17, 17C, 38 & 96)	T.C. 60-4	Owego Village: Park and Front Sts., S.H. 5729; Front St., S.H. 9339; Main St., S.H. 9340 and North Ave., S.H. 9341; Owego-Candor, Pt. 1, S.H. 5420	0.45	Traffic Signals	$5,300 Plans $5	97,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Franklin (Rte. 11)	R.C. 60-112	Nicholville-Moira, S.H. 5284 Malone-Moira, Pt. 3, S.H. 5076	4.79	Asph. Conc. Type 1A	$8,000 Plans $5	149,000
Franklin (Rte. 37)	R.C. 60-124	Raquette River-Hogansburg, Pt. 2, St. Regis Indian Reservation-Fort Covington, Pt. 1, S.H. 8396	4.83	Asphalt Concrete	$12,000 Plans $5	218,000
Jefferson (Rte. 12)	R.C. 60-125	Clayton-Alexandria Bay, S.H. 5304	7.09	Asph. Conc. Type 1A	$13,000 Plans $5	231,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Westchester (Rte. 22)	R.C. 60-117	Tuckahoe-White Plains, Pt. 1, S.H. 5355	2.42	Asphalt Concrete	$11,000 Plans $5	194,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17)	R.C. 60-114	Vestal, S.H. 420 Vestal-Binghamton, S.H. 1613	4.75	Asphalt Concrete	$11,000 Plans $5	191,000
Chenango (Rtes. 41 & 206)	R.C. 60-113	Afton-Coventry, Pt. 2B, S.H. 8185 Coventryville-Bainbridge, S.H. 8216	8.10	Asphalt Concrete	$21,000 Plans $5	374,000
Otsego (Rte. 205)	R.C. 60-118	Hartwick-Oaksville, S.H. 8425	5.12	Asphalt Concrete	$10,000 Plans $5	190,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956," being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: Sept. 2, 1960

Federation of Malaya
Cameron Highlands Scheme
Contract No. 6

Tenders are invited for the supply and erection of Transformers to be installed on behalf of the Central Electricity Board of the Federation of Malaya.

The Contract now advertised will comprise seven power transformers in sizes ranging between 20 MVA and 30 MVA and one 8 MVA power transformer, all suitable for connection to a 132 kV system, together with two 33/.433 kV grounding/auxiliary transformers.

Tenders are invited only from firms who are prepared to submit complete tenders.

A short precis of the extent of the work for which complete and comprehensive offers are invited may be had on application to Messrs. Preece, Cardew & Rider, 8, 10 & 12 Queen Anne's Gate, London S.W.1.

Tender documents, which will be available from 4th July 1960, and returnable by 2nd September 1960, may be obtained from the same address on receipt of a payment by cheque for £15 in favour of Preece, Cardew & Rider. This payment will not be refunded.

At a later date offers will be invited for Cables and Lighting. Persons interested in such should NOT now apply, but await further advertisements.

The Central Electricity Board do not bind themselves to accept the lowest or any Tender, nor will they be responsible for any costs incurred by Tenderers in making their Tender.

Bids: July 7, 1960

The Port of New York Authority
Staten Island Bridges
Catwalks and Access Ladders
Contract O & M—574

Sealed proposals for furnishing and installing catwalks and ladders on the Bayonne Bridge (Alternate "A"), on the Goethals Bridge (Alternate "B"), on the Outerbridge Crossing (Alternate "C"), on the Bayonne Bridge and Outerbridge Crossing (Alternate "D"), or on all three bridges (Alternate "E") will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Thursday, July 7, 1960, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, which will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman
June 23, 1960, New York.

Read the Official

Proposal Columns of

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

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ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

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Send to office nearest you.
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CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Draftsmen. Structural-Experienced checkers and detailers of structural steel shop drawings. Permanent position. Fink and Zwecker Co., 1100 Crescent Ave. N.E., Atlanta 9, Ga.

Superintendent - Engineer - Foreman. Sewer-roadwork. New York area. Address experience resume to P-4565, Engineering News-Record.

Specifications Writer. Permanent position available immediately with established Midwestern consulting firm. Architectural degree preferred. Moving expenses paid. 3-week vacation. Salary commensurate with ability. Write P-4548, Engineering News-Record.

Black Top Plant superintendent wanted. Ex-perience in handling men and maintenance of equipment. Good future. P-4552, Engineering News-Record.

Cost Engineer—for supervision of entire cost accounting system for leading building and heavy construction firm, principal office in N.Y. Metropolitan area. Minimum 5 years experience in cost supervision and analysis required. Reply with complete resume to P-4615, Engineering News-Record.

Construction Engineer—For inspection of Municipal construction of streets and sewers and supervision of project inspection personnel. Prefer engineering education background and recent construction experience. Permanent Civil Service Appointment, starting salary $269.80 biweekly with yearly increase to $310.90 biweekly after three years. Submit resume and list of references to Director of Public Service, P.O. Box 530, Middletown, Ohio.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS
TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.
330 West 42nd St., New York 36, N. Y.

POSITIONS VACANT

Wanted—Assistant City Engineer. Age 28-40. Must have college degree in Civil Engineering and not less than five years experience in the engineering field. Good opportunity for advancement in a rapidly growing city of 20,000. Salary open. Contact H. F. Beisner, City Engineer, Cedar Falls, Iowa.

Resident Engineer—at least five years of railroad construction experience. Good salary. St. Louis area. Please send resume of experience. P-4601, Engineering News-Record.

Engineer—Concrete. Progressive So. Calif. concrete company requires experienced technical man in quality control and research and development of concrete aggregates and affiliated products. College background preferred, but not essential. Send educational resume and experience to P-4635, Engineering News-Record.

Concrete Technology Engineer. Interesting and challenging growth position with national organization. Opportunity to participate in the development and dissemination of engineering data in the field of quality concrete as applied to structures. Work includes technical writing, consultation and lecturing before professional groups. Small amount of traveling. Degree in civil engineering required. Qualifications should include theoretical and practical experience with conventional and lightweight mix designs and construction practices. Experience in field inspection and quality control of concrete is desirable. Excellent working conditions, insurance benefits and pension plan. Salary commensurate with experience and ability. Age 30 to 40. Location, Chicago. Submit complete outline of background and experience. P-4674, Engineering News-Record.

Experienced Sanitary Engineer. Excellent op-portunity for well qualified engineer to head Sanitary Department. Must be experienced in design, estimating and supervising sewage disposal plants, sewage and water systems. Opening in Ohio office. Please send complete resume and salary expected to P-4651, Engineering News-Record.

Engineer-Inspector immediately for 20 miles high-pressure waterline & related water supply construction. Salary $450 per month; car required, mileage at 8¢ per mile allowed. Give age, experience, availability, references and your telephone in first letter to J. P. Wallace, Resident Engineer, Ashburn, Virginia.

Flood Control Engineer: A registered profes-sional engineer between age of 30 to 45 years with experience in hydrology and hydraulics. Starting salary $10,000.00 per year with car furnished. Applicant should have ability to take over complete charge of office. Apply with complete resume of experience and qualifications to Board of Flood Control Commissioners, City Hall, Indianapolis 4, Indiana.

Opening for engineering graduate, responsible, with a flair for design, to assist chief engineer as project manager, field supervisor, subdivision designer for growing land development company in New York and eastern area. Must have potential executive caliber. Write Room 302, 180 South Broadway, White Plains, New York.

Airport Design Engineer. Experienced gradu-ate, manage production office airport design Santiago, Chile. Foreign experience, knowledge Spanish desirable. Send resume, references. P-4686, Engineering News-Record.

(Continued on page 278)

MANAGER
Of
CONSTRUCTION

Active construction Company has need for top manager of construction. Must be graduate mechanical, civil or chemical engineer with minimum of 20 year's experience in the field and know chemical plant contracting; be willing to relocate.

Reply with all data including salaries earned and requirement in first letter in full confidence to:

PAUL S. MONROE
Vice-President

SD PLANTS
INCORPORATED
2 Park Ave., New York 16, N. Y.

WANTED
BUSINESS PARTNER
as
EXECUTIVE Vice-President and General Manager

Consulting Engineering and General Contracting Group

World Wide Contacts
Foreign and Domestic Projects

Sales experience Essential

Minimum investment $50,000.00

Annual income should equal investment
Send complete resume first letter

P-4350—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PRODUCTION ENGINEERS
To Locate in Florida

Desirable Positions available immediately with very large progressive prestressed and precast concrete manufacturer.

Salary commensurate with ability.

Send complete resume with recent photograph.

Will contact qualified applicants and arrange for personal interview.

P-4584, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

MECHANICAL ENGINEERS

Openings for graduate engineers with a minimum of 5 years experience with consulting firm on piping, review of manufacturer's drawings, equipment layout. Powerplant experience desirable. Fringe benefits, part relocation costs. Send experience resume to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison Street Chicago 6, Illinois

SENIOR ESTIMATOR

We want an experienced construction man who is able to participate and direct others on the quantity survey, pricing, subbid solicitation, analysis, and final close-out of bids for large building, technical and industrial projects.

Most of our work is in the Western and particularly Southwestern portion of the United States, however, we bid throughout the world. Our current volume is in the 60 million dollar range. Our growth pattern has been outstanding among building contractors and applicants will be considered on ambition and ability to help in this expansion, as well as the prime qualifications of experience, education, executive and technical ability.

C. H. LEAVELL & COMPANY
1900 Wyoming Ave. El Paso, Texas

CHIEF ENGINEER

Graduate civil engineer with experience in wood form work and shoring of concrete structures. Wisconsin professional engineer preferred. Rex Spanall Inc. (Subsidiary Chain Belt Company). Write Chain Belt Company, 4501 West Greenfield Ave., Milwaukee 1, Wisconsin, for further information.

HELP WANTED

Road construction engineer, emphasis asphaltic concrete. Know mix design, procedures, specifications. Engineering, contracting, procurement experience. Introduce, supervise, evaluate new product field tests. Research, sales liaison. Travel. Our employees know of opening. R. E. Hartwig, **JOHNS-MANVILLE,** Box 91, New York 16, N. Y.

• *POSITIONS VACANT*

(Continued from page 277)

Civil and Sanitary Engineer, Washington State major consulting engineers office. Require a minimum of 7 years responsible experience in design of sewage plants, pump stations, etc. Resume to include complete background and salary range. Hill and Ingman, 3104 Western Avenue, Seattle 1, Washington.

Engineer—Structural Steel Sales Promotion. We are searching for a Civil or Architectural engineer, preferable age 30 to 45, to handle technical and promotional work with customers of the structural steel fabricating industry. Headquarters will be in our district office at Boston, Massachusetts. Moderate travel required in covering the area made up of Massachusetts, Rhode Island, New Hampshire and Maine. Applicants should have a B.S. in C.E. or A.E. and preferably be registered. Experience in bridge and building design, and construction in both steel and concrete required. Salary open depending on experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirements by mail to American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York. All applications will be acknowledged.

Plant Engineer. $12,000. Mechanical or Industrial. Baker Employment. Decatur, Ill.

• *POSITIONS WANTED*

Field-office engr. layout, supervision, take off, etc. municipal, bldg. and heavy const. large or small firms, single. Location open. E. Brown, 600 N. 71st Ave., W. Hollywood, Fla.

Construction Supt. General Construction. PW-4482, Engineering News-Record.

Estimator, Experienced in estimating and cost keeping, Highways and Drainage contracts. Evenings and weekends, Long Island. PW-4487, Engineering News-Record.

Construction superintendent considerable experience in industrial and commercial work. PW-4494, Engineering News-Record.

Project Manager-General Supervision 20 yrs. exp. highways, bridges, waterfront, earthwork, utilities, major projects U.S. & O.S. PW-4614, Engineering News-Record.

Construction Superintendent 25 years experience on industrial & municipal work. Power, water and sewage plants from bid to completion. Will relocate. PW-4566, Engineering News-Record.

SANITARY ENGINEER

Capable of responsible charge of investigations, reports, and design for growing established firm specializing exclusively in sanitary engineering. Minimum of 10 to 15 years' experience. Salary fully commensurate with qualifications. Excellent opportunity for advancement. Resume in complete confidence.

CAMP, DRESSER & McKEE
18 Tremont Street
Boston, Massachusetts

ENGINEERS

Immediate openings for engineer—designers with minimum five to ten years experience in design and planning of hydroelectric projects. **Also senior hydrologist, senior and junior hydropower planners.** Fringe benefits. Send complete resume of experience and qualifications to:

HARZA ENGINEERING COMPANY
400 West Madison Chicago 6, Illinois

WANTED
Highway Materials Research Engineer

to direct expanding research program. Salary and rank will depend on qualifications. Advanced degree and professional registration desirable. Write to **G. A. Riedesel, Division of Industrial Research, Washington State University, Pullman, Washington.**

• *POSITIONS WANTED*

Electrical Engineer, BEE, Reg PE, 37, 14 years diversified experience in industrial power and control, power distribution, and petroleum-electric fields. Four completed foreign contracts. Speaks French, Spanish. Available foreign or domestic. PW-4506, Engineering News-Record.

Construction Superintendent—Project Manager. Industrial & Commercial buildings. Will relocate. PW-4497, Engineering News-Record.

Available Executive Hydraulic Dredge Civil Engineer. Many years experience in field investigation, estimates, management, consultant. Full time or project basis. PW-4554, Engineering News-Record.

Chief Civil and Structural Engineer—age 46 —20 years experience including private practice U.S. & overseas—$14,000. PW-4631, Engineering News-Record.

Former consultant, 54, highly productive, ample capital, seeks association with established engineering firm, N.Y. City area. PW-4628, Engineering News-Record.

Project manager, construction supervision, contract administration. 21 years exp. gnl. bldg. const. Desire West Coast only. PW-4625, Engineering News-Record.

Graduate Civil, 36, 10 years experience steel, conc. design, dredging, construction, field work; speaks French; accept work America, abroad. PW-4616, Engineering News-Record.

Construction Superintendent. 30 years experience refinery, chemical plants, compressor stations, recycling plants. Will relocate. Foreign or domestic. PW-4594, Engineering News-Record.

Party Chief & Inspector—Diversified experience—single, desires position USA or overseas. PW-4591, Engineering News-Record.

Gen. Supt. 30 years experience in heavy construction. Prefer earth moving, rock or dam and levee work. Will relocate. PW-4588, Engineering News-Record.

Japan—Civil Engineer, 32, experienced in highway and airfield construction seeks responsible position with firm engaged in construction projects. Specialist in soils . . . capable organizer . . . dependable. Top references. PW-4596, Engineering News-Record.

(Continued on opposite page)

ENGINEERS AVAILABLE

FAR EAST

Project manager with top team of registered architect, civil, mechanical, electrical and field engineers capable of handling jobs from design through construction. Presently in Korea. Available 1 July, 1960.

PW-4590, Engineering News-Record
68 Post St., San Francisco 4, Calif.

• POSITIONS WANTED

(Continued from preceding page)

Engineer, surveyor, inspector, computer, chief of party. New Jersey registration. Twenty years, highways, sewers, water lines, transmission lines, realty sub-division surveys. PW-4605, Engineering News-Record.

Concrete, soils inspector and technician, 21, married, ambitious. 2½ yrs. exp. in field & laboratory, light & heavy construction, some supervision. Studying civil engineering through ICS. Presently employed by leading consultant. Desires position with gen. contractor in or near District of Columbia. Exc. references. Resume on request. PW-4597, Engineering News-Record.

M.S.C.E. 14 yrs. supervisory, design, construction, buildings, bridges in U.S., Latin Am., mid-east. 5 languages. Last empl. ass. chief structure engr. with U.S. consultants Latin Am. Interested administrative or supervisory position USA or overseas. PW-4637, Engineering News-Record.

Sanitary Engineer, 62 years old seeks an active connection. Can work with and handle men and produce results. Broad experience in investigations reports, design and supervision of construction of water and sewerage systems and water and sewage treatment plants. PW-4643, Engineering News-Record.

Field or Office Engr., experienced, grad. of 2-yr. Highway and Municipal Tech. College. Young, married and no children. Presently employed o'seas. Desire another o'seas assign't. Excellent ref. Will relocate at my expense. Avail. soon. PW-4633, Engineering News-Record.

Project &/or Construction Engr. 26 yrs. experience all phases light & heavy industrial, municipal utility projects, incl. complete civil, electrical & mechanical on steam turbo & diesel installations. Have had and will consider office or field assignments for consultants, contractors, or plant engineering program for owner. Will relocate. Available July 1st. E. T. Garlock, 1916 N.W. 20th, Oklahoma City, Okla.

C.E. resident layout engineer on bridges, highways, dredging, 4 years experience, 32, married, desires advancement, domestic or foreign construction. PW-4661, Engineering News-Record.

Construction Executive age 39. 12 years experience as division manager, estimator, superintendent, project engineer, civil engineer on marine and heavy construction. PW-4650, Engineering News-Record.

Project Manager, Grad. C.E. 32, waterworks, roadbuilding, pipelines, management and business experience, domestic and foreign. Available at once. PW-4652, Engineering News-Record.

Highway Engineer 57, BS in CE, PE, F.ASCE, with 35 years experience as bridge and highway engineer on highest type work. With present organization 30 years. Now in responsible engineering supervisory position. Desire to make change soon commensurate with experience and ability. Prefer southern or Mid-Atlantic location. PW-4649, Engineering News-Record.

Structural Engineer desires position in Australia. M.S.C.E. 31 years old, 9 years experience in highway, railroad, tunnels and river crossing bridges including field supervision. Resume on request. Available for interviews. PW-4646, Engineering News-Record.

Structural Design-Nuclear facilities. Recent M.S. in structural engineerring. Experienced in steam power structures and design of nuclear reactors. Cal. EIT, ASCE. East Coast location with A-E or industry. Available July. PW-4678, Engineering News-Record.

B.S.C.E., M.C.E.—25—4 yrs exp. desires position in sanitary eng., site planning or these phases of a large C.E. project. PW-4681, Engineering News-Record.

• POSITIONS WANTED

Executive 15 yrs exp all phases of the business, field & home office, legal-const background, mgr. atty. admstr. trouble-shooter. PW-4672, Engineering News-Record.

Construction Supt. BSCE, Exp. Mgr. Chf. Eng. Hvy. const. Roads flood control tunnels bldgs. govt. contr. Will relocate, Elsworth, 3419 Utah, St. Louis, Mo.

Purchasing Agent. B.S., B.A. Experience: Traffic, Analyst, Equipment Superintendent, general superintendent, and purchasing in trucking, heavy construction and mining. Excellent background, presently employed. Desire change in Midwest or Middle Atlantic area. Write PW-4670, Engineering News-Record.

• POSITIONS WANTED

Experienced construction superintendent past retirement age desires subordinate job with construction company. Recently completed year job at salary of $13,000.00 per year. PW-4671, Engineering News-Record.

Project Engineer—Civil—Age 29, 8 yrs general and heavy construction 1 year post-graduate work soil mechanics desire work in B.W.I., South America or foreign. Single status, French and English. PW-4665, Engineering News-Record.

Grad Civil Engineer, 29, 6 years heavy construction exp., office and direct supervision. Desires direct supervision or asst supt on road, dam job et. Anywhere. Resident of Canada. PW-4656, Engineering News-Record.

SEARCHLIGHT SECTION

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$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

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Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

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Exclusive Franchise Offered To Professional Engineer. Proven money-making home inspection consulting service has received tremendous national publicity. New York Engineering firm founder with offices in Long Island, New Jersey, Chicago and Detroit, again expanding and offering franchises in other metropolitan-suburban areas. Professional, graduate engineering background required. Little capital needed. Tell age, education, experience in first letter. Strictest confidence. BO-4593, Eng. News-Record.

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ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.

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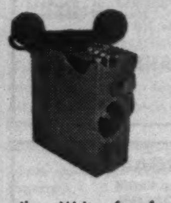

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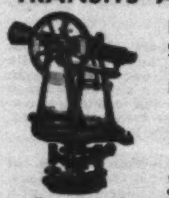

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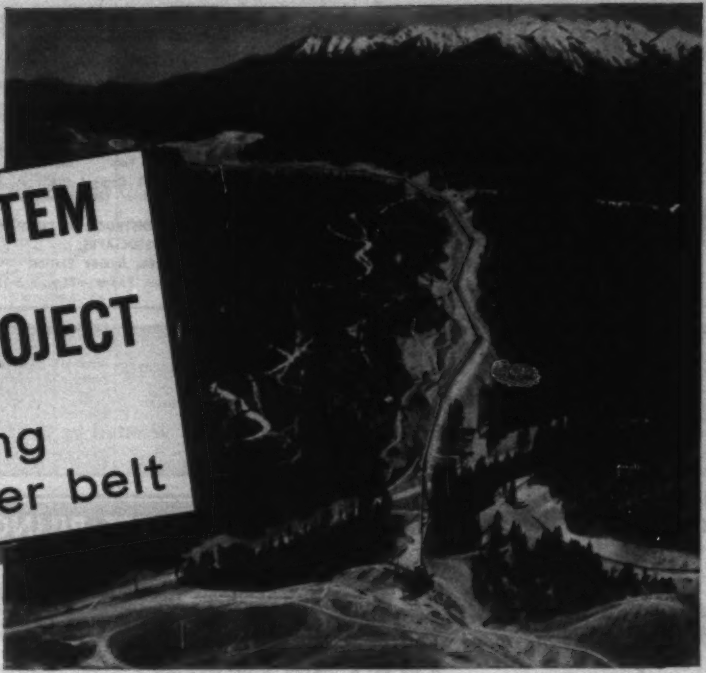

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Editorials

Time to Build Roads

THE LONG, HOT SUMMER IS HERE and the highway industry can settle down to its fundamental job—building roads and bridges. This is a welcome prospect and, provided a responsible and realistic concern is reserved for problems to come, the months ahead can produce rewarding progress.

There are several reasons for this brighter state of affairs. Over for now are the hearings of the Blatnik committee, which revealed the Oklahoma scandal (ENR May 12, p. 21). For fiscal 1961, the Bureau of Public Roads has released the long awaited allocations of federal funds to the states (ENR June 9, p. 17), to be made in equal quarterly installments, and to total nearly $2.9 billion—up more than 7% from a year ago. And now near passage is a compromise bill containing authorizations for federal funds for ABC roads in the amount of $925 million for fiscal 1962, and a like amount for fiscal 1963. The major uncertainties are thus removed since no additional federal highway legislation or important fiscal action is expected during the rest of the year.

On the plus side, too, is the fact that contract awards are booming, in line with earlier predictions (ENR Apr. 21, p. 34). Total of highway and bridge awards tabulated by ENR for the first 23 weeks of 1960 is $1,764 million, including work by both state and local agencies. This is up more than 13% from a year ago. Also to be noted are the definite plans to add substantially during this construction season to the mileage of the Interstate system open to traffic, enhancing further the solid progress already recorded for this superhighway net (see p. 48-49).

As to highway construction costs, they are detailed in this issue's highway cost roundup (p. 58). Costs continue to rise as predicted: relatively slowly, as materials prices stay steady and wages keep gradually moving up. And bid prices stay down as hot competition among roadbuilders puts them in perhaps the worst profit squeeze they've ever known.

This summer, it seems assured, dirt can be moved, pavers can pave, and engineers can engineer in comparative peace and quiet. Yet, satisfying as it may be to get on with the job, highway officials and roadbuilders should not be lulled into forgetting that some real problems lie ahead.

Next January, for example, BPR's report to Congress on highway costs and benefits is almost certain to touch off bitter debate over the highway program and its financing. And the Blatnik investigating team will not be resting on its laurels. It is quietly at work digging for faulty administration, engineering or construction, and chances are that it will find some more to expose to the harsh light of publicity.

The lesson here is that highway construction this summer—and on into the winter—must be done with utmost efficiency and economy. And equally important, abuses in administration, such as those uncovered in Oklahoma, must be rooted out and corrected. The benefits to the nation of an improved highway system are so great that no shortcomings or derelictions on the part of the highway building fraternity itself should be allowed to obscure this fact.

The time has come to build roads—and build them fast and well.

New Tools and Mental Inertia

A SURVEY by the American Institute of Steel Construction indicates that most major cities either have adopted or will soon adopt the AISC "Rules for Plastic Design and Fabrication" (see p. 134). In view of the relatively recent issuance of these specifications (18 months ago), this prospect is encouraging.

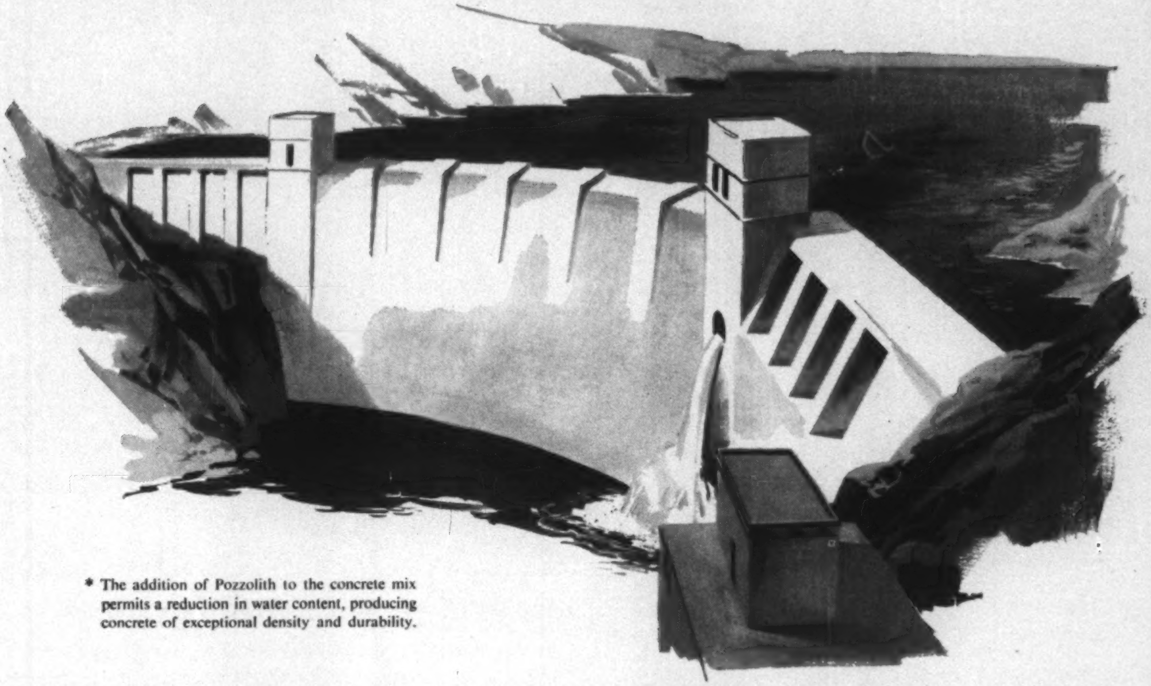
But getting code acceptance of a new design tool is perhaps the easier half of the battle to put it into extensive use. A more formidable obstacle than the building codes is the mental inertia within the structural engineering profession, which has not readily taken up other innovations in design methods.

Plastic design has proven itself through all the available methods of evaluating a design concept: theoretical analysis, laboratory testing and actual performance in structures. Authorities in steel design are unanimous in accepting it as the proper approach; or if there are any objectors, they have remained conspicuously silent. Yet experience with ultimate design in concrete indicates that far too many structural engineers will remain in the old groove, cranking out designs by the working-stress theory even where the codes permit plastic design.

The most obvious reason for encouraging the use of modern design methods is, of course, a saving in construction materials. And this unquestionably can be done with plastic design as was shown on the Gates Rubber manufacturing plant in Nashville, Tenn. Engineers on this structure saved 140 tons of steel in their plastically designed rigid frames (ENR May 26, p. 50). Other engineers also have found that use of the plastic theory makes for easier, quicker design than conventional elastic analysis of multi-span continuous frames.

There are other reasons, less tangible but equally important, for using plastic design. For one thing, it promises fabrication and erection economies when welding for continuity. It will also open the way for better structural forms as engineers exploit the advantages of the new theory. And better designs will, in turn, stimulate contractors to find better ways of building.

Basic responsibility for putting a new design tool into practice lies within the engineering profession itself. And to discharge it, mental inertia must be licked.



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The load-carrying capacity of Minnesota Trunk Highway No. 7 was doubled by resurfacing it with 7½ inches of hot-mix with Texaco Asphalt.

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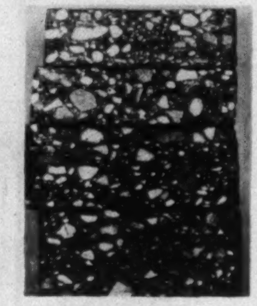

Cross-section assembled in the laboratory from specimens cut from the road of 7½-inches of hot-mix with Texaco Asphalt. The four layers from the top down are the 1½-inch surface, 1½-inch binder course and 4½-inch base (laid in two courses).

ASPHALT doubles a highway's strength

The original pavement on this Minnesota trunk highway was laid in 1952. It was designed to carry 1,000 vehicles a day and a maximum axle load in spring of five tons. The pavement consisted of a 9-inch gravel base and subbase, topped by a 1½-inch surface of asphalt hot-mix.

Last year, this highway's load-carrying capacity was increased to 2,000 vehicles a day and its maximum allowable axle load in spring increased to nine tons. This was accomplished at moderate cost in a minimum of time by resurfacing the 1952 pavement with 7½ inches of hot-mix, using Texaco Asphalt. The new pavement was composed of a 4½-inch asphalt base course, a 1½-inch binder course and a 1½-inch wearing surface.

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